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bart impact program

Land Use and Urban Development Project STUDY OF PROPERTY ACQUISITION AND OCCUPANCY BART'S EFFECT ON SPECULATION



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planning document

The BART Impact Program is a comprehensive, policy-oriented study and evaluation of the impacts of the San Francisco Bay Area's new rapid transit system (BART).

The program is being conducted by the Metropolitan Transportation Commission, a nine-county regional agency established by state law in 1970.

The program is financed by the U. S. Department of Transportation, the U. S. Department of Housing and Urban Development, and the California Department of Transportation. Management of the Federally funded portion of the program is vested in the U. S. Department of Transportation.

The BART Impact Program covers the entire range of potential rapid transit impacts, including impacts on traffic flow, travel behavior, land use and urban development, the environment, the regional economy, social institutions and life styles, and public policy. The incidence of these impacts on population groups, local areas, and economic sectors will be measured and analyzed. Finally, the findings will be interpreted with regard to their implications for the planning of transportation and urban development in the Bay Area and other metropolitan areas.

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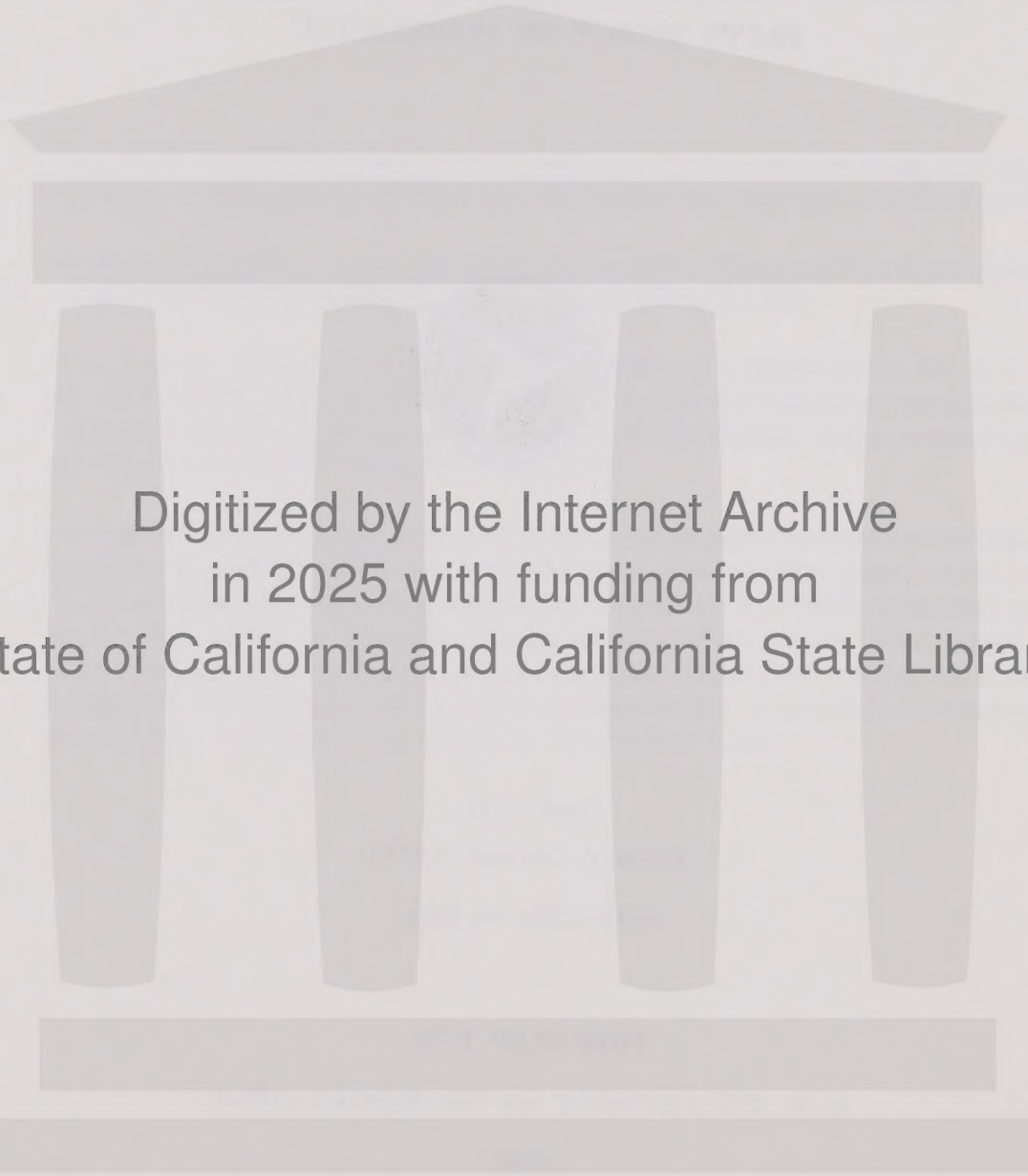
BART IMPACT PROGRAM
LAND USE AND URBAN DEVELOPMENT PROJECT
STUDY OF PROPERTY ACQUISITION AND OCCUPANCY
BART'S EFFECT ON SPECULATION



April 1978
(Revised October 1978)

WORKING PAPER

PREPARED FOR
U.S. DEPARTMENT OF TRANSPORTATION
AND
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT



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**PREPARED BY JOHN BLAYNEY ASSOCIATES/DAVID M. DORNBUSCH & CO., INC.
A JOINT VENTURE**

**UNDER CONTRACT WITH THE METROPOLITAN TRANSPORTATION COMMISSION
FOR THE U.S. DEPARTMENT OF TRANSPORTATION
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16. Abstract This working paper addresses BART's effects on speculation in real estate in the three-county BART service area. Information from interviews with key informants was combined with quantitative analyses of data assumed to be indicative of speculation at eight study sites throughout the service area. The resultant station-specific syntheses were further synthesized to deduce observations applicable to more than one station area. The study addresses specific issues of the timing and the extent as well as the character of BART-induced speculation.			
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SAN FRANCISCO BAY REGION CENTRAL AREA

- BART:** The Bay Area Rapid Transit System
- Length:** The 71-mile system includes 20 miles of subway, 24 miles on elevated structures and 27 miles at ground level. The subway sections are in San Francisco, Berkeley, downtown Oakland, the Berkeley Hills Tunnel and the Transbay Tube.
- Stations:** The 34 stations include 13 elevated, 14 subway and 7 at ground level. They are spaced at an average distance of 2.1 miles: stations in the downtowns are less than one-half mile apart, while those in suburban areas are two to four miles apart. Parking lots at 23 stations have a total of 20,200 spaces. There is a fee (25 cents) at only one of the parking lots. BART and local agencies provide bus service to all stations.
- Trains:** Trains are from 3 to 10 cars long. Each car is 70 feet long and has 72 seats. Top speed in normal operations is 70 mph with an average speed of 36 mph including station stops. All trains stop at all stations on the route.
- Automation:** Trains are automatically controlled by the central computer at BART headquarters. A train operator on board each train can override automatic controls in an emergency.
- Magnetically encoded tickets with values up to \$20 are issued by vending machines. Automated fare gates at each station compute the appropriate fare and deduct it from the ticket value. At least one agent is present at each station to assist patrons.
- Fares:** Fares range from 25 cents to \$1.45, depending upon trip length. Discount fares are available to the physically handicapped, children 12 and under, and persons 65 and over.
- Service:** BART serves the counties of Alameda, Contra Costa and San Francisco, which have a combined population of 2.4 million. The system was opened in five stages, from September 1972 to September 1974. The last section to open was the Transbay Tube linking Oakland and the East Bay with San Francisco and the West Bay.
- Routes are identified by the terminal stations: Daly City in the West Bay, Richmond, Concord and Fremont in the East Bay. Trains operate from 6:00 a.m. to midnight on weekdays, every 12 minutes during the daytime on three routes: Concord-Daly City, Fremont-Daly City, Richmond-Fremont. This results in 6-minute train frequencies in San Francisco, downtown Oakland and the Fremont line where routes converge. In the evening, trains are dispatched every 20 minutes on only the Richmond-Fremont and Concord-Daly City routes. Service is provided on Saturdays from 9 a.m. to midnight at 15-minute intervals. Future service will include a Richmond-Daly City route and Sunday service. Trains will operate every six minutes on all routes during the peak periods of travel.
- Patronage:** Approximately 142,000 one-way trips are made each day. Approximately 200,000 daily one-way trips are anticipated under full service conditions.
- Cost:** BART construction and equipment cost \$1.6 billion, financed primarily from local funds: \$942 million from bonds being repaid by the property and sales taxes in three counties, \$176 million from toll revenues of transbay bridges, \$315 million from federal grants and \$186 million from interest earnings and other sources.

PREFACE

The BART Impact Program (BIP) is a comprehensive policy-oriented effort to identify, describe, measure, and present findings as accurately as possible about the multi-faceted impacts of a major public transportation investment—the BART system. The major objective of the Land Use and Urban Development Project is to determine how and to what extent BART has influenced the spatial arrangements of people and activities within the San Francisco Bay Area. To accomplish this task, the project will focus on the way BART has influenced (1) location decision processes; (2) actual movement behavior that results from those decisions and other market forces; and (3) the form, character, and functioning of aggregate spatial groupings that represent the net outcome of those decisions and movement patterns. Changes attributable to BART will be measured against pre-BART and no-BART alternatives. In all of these studies BART's effects on individual socio-economic groups, particularly minorities and the disadvantaged, will receive careful attention.

The Land Use and Urban Development Project is one of six major projects comprising the BART Impact Program. The others are:

- Economics and Finance Project (E&F)
- Environment Project (Env)
- Institutions and Lifestyle Project (ILS)
- Public Policy Project (PP)
- Transportation System and Travel Behavior Project (TSTB)

Each of these projects is designed to investigate specific aspects of BART's impacts, to explain why the impacts occur, and to identify who is affected by the impacts and the distributional effects. The projects then will demonstrate how the information derived can be used by decision-makers to enhance the benefits and to reduce the dis-benefits of BART and to increase understanding of the potential impacts of rail rapid transit investments in the Bay Area and other American metropolitan areas.

This working paper presents the analysis and findings of the study of BART's impact on speculation in real estate—one aspect of BART's impacts on land use and urban development. The paper is presented for review by BART Impact Program staff, federal sponsors, and other interested planners and researchers.

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SUMMARY AND FINDINGS

This study investigates the prevalence of property acquisition and holding for the purpose of profiting from the sale of the property. It also examines BART's influence on the conversion and intensification of land use. Specifically, the focus is on determining the nature, timing, and extent of speculative property acquisition and retention near BART stations.¹ Attention is also given to the question of whether speculative activity has been any different in minority neighborhoods.

The study issues were investigated by combining in-depth interviews of knowledgeable informants with statistical analyses of land use data indicative of speculation. Analyses were conducted for the areas surrounding each of eight BART stations.

It was found that BART has induced some speculation in certain station areas. This activity peaked around the time the stations were built and has now generally diminished. The speculation has nowhere been extensive in either amount or geographical extent. The activity has not been noticeably different in minority neighborhoods.

Speculation occurred in all types of small real estate holdings; we found no large-scale speculative buying or holding of land. The activity was concentrated on small commercial properties and residential structures, although there were examples of large office-construction projects which were at least partially motivated by BART-related speculation.

There have been marked differences in speculative activities among the communities in the BART service area. Whereas there has been no speculation in suburban southern Alameda County, speculative activities have occurred in equally suburban central and east Contra Costa County and in the established, older communities in northern Alameda County and western Contra Costa County. Likewise, BART-induced speculation has occurred in downtown Oakland, but not in downtown San Francisco. The reasons for these geographical differences are not entirely clear but among the probable explanations are lack of BART-related demand, and either high risk or no risk associated with development in the station areas studied.

The No-BART Alternative would not have concentrated expectations for future development as BART did by virtue of its nature as a fixed-rail, limited access system. Therefore, the No-BART Alternative would probably not have generated the same level nor the same geographical configuration of speculation as BART did.

As the findings of the entire Land Use and Urban Development Project show,

1. Speculation is defined as an economic activity which involves the buying and holding of real property in expectation of profiting from a change in the market price.

BART has had a much smaller (or slower) effect on land use and location decisions than was initially anticipated by the system's planners as well as by speculators and developers. Therefore, one might expect, assuming some transfer of information, that a future mass transit system would generate lower expectations, and hence less speculation, than BART did. Some speculation will nevertheless occur, and public measures to control unwanted aspects of speculation near station areas may be warranted. However, the extent of speculation appears so small that far-reaching intervention in the market processes would probably have a net adverse effect in the long run, because the beneficial aspects of speculation would also be prevented.

1. INTRODUCTION

When expectations of future development are high, land may be profitably held vacant or in intermittent use. Likewise, expectations of future increases in prices or rents justify a current price higher than that based upon the returns from the current land use. Thus, speculation is commonly thought to be socially undesirable. First, it is believed that speculation leads to a misallocation of resources through slowing the rate of development and raising real estate prices above those justified by current uses. Second, it is also thought that speculation serves to redistribute income to the speculators from "everyone else."² In the following pages we shall first derive a definition of speculation,³ and next discuss the effects of speculation in the light of both economic theory and prior empirical research, especially land use studies.

Suppose a certain major public project, like BART, is expected to benefit a particular piece of property. Furthermore, suppose this benefit is expected to begin k years from now, and end in year T . Denote the net benefit in any given year t by B_t . The present value of the entire stream of future benefits from the improvement is then

$$(1) \quad PV_0 = \sum_{t=k}^T \frac{B_t}{(1+i)^t},$$

and an investor would be willing to pay at most this much more for the piece of property than he would be willing to pay solely on the basis of the returns from the property's present uses.⁴ Thus, a price higher than what might be expected on the basis of current returns is an indication of expectations of higher future returns, and hence might signify speculation.

The above simple model can be refined to include uncertainties which would

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2. San Francisco Supervisor Quentin Kopp recently expressed the same concerns in the following language: "Speculation doesn't mean a guy who buys a house and lives in it while he's fixing it up and then later sells it for a profit. He's appreciated the property and deserves his profit. What I'm talking about is non-owner occupied houses -- where a speculator buys it not to live in or even to improve but just to resell for a big buck." Direct quote from interview in San Francisco Chronicle, 19 January 1978, p. 6. See also, e.g., J. R. Markusen and D. T. Scheffman, Speculation and Monopoly in Urban Development: Analytical Foundations with Evidence for Toronto (Toronto: University of Toronto Press, 1977), p. 4.
 3. The reader may wish to skip the derivations and proceed directly to the definition adopted for this study on the following page.
 4. Note that PV_0 (or B_t) does not include the returns from the property's present uses which are assumed unaffected by the public project.

reduce the present value of future benefits. To account for this, expected rather than definite values might be substituted in equation (1); i.e., B_t becomes $p_t B_t$ where p_t denotes the (subjective) probability that B_t will be realized. Furthermore, since speculative activity typically involves the resale of an acquired property, it is appropriate to separate the resale value from all other benefits, i.e., B_t does not include the resale price. Denote that portion of the resale price which represents the increase in the property's value due to the public project, net of any transaction costs including taxes, by S and multiply it by a risk factor, r , to express the uncertainty about future prices. Obviously S depends on the capitalized future benefits from the project (to the buyer) at the time of the sale. We can then rewrite equation (1) as

$$(2) \quad PV_O^1 = PV_O + \frac{r_T S_T}{(1 + i)^T}$$

Assuming profit maximizing sellers and buyers, we can now define speculation as a real estate transaction where the actual price paid exceeds the price based upon the property's current uses by some amount less than PV_O but not greater than PV_O^1 . We thus exclude from our definition investment in a property to take advantage of a public project, but without the intention of profiting from the mere resale of the property.

However, speculation can also take place without a prior purchase with the explicit intention of reselling for a profit. An original owner might hold on to a property awaiting an increase in the market price. Only a slight modification in the above definition is needed to account for this situation. Instead of the "actual price paid" we need to consider the costs of holding the land and the profits foregone by having the capital tied up (i.e., opportunity cost).

In economics, an agent who provides capital for use in the production of goods and services is usually referred to as an investor. In contrast, a speculator is an actor who buys and sells assets with the intent of realizing a capital gain through an anticipated change in market prices. In practice, of course, there are situations where the agent has a dual purpose in mind: both speculative gain and use of the asset in production. Since it is the intent to speculate which sets the speculator apart, not the ex post realization of a windfall profit, it becomes exceedingly difficult to distinguish empirically between speculative transactions and pure investment, especially where the situation is blurred by dual purposes.

In keeping with the traditional terminology and for use in interviewing key informants for this study, we defined speculation as the buying and/or holding of real property in expectation of profiting from changes in the market price which are not a direct result investment in the property itself.⁵

As we shall see later, this shortcoming is mitigated by the use of empirical data which do not distinguish between single and multiple purpose actions but are

5. This definition contentwise parallels that of Markusen and Scheffman, op. cit., p. 4.

indicative of any transaction with speculative motives.

Many noted economists have provided theoretical analyses of speculation as a market mechanism. Milton Friedman, among others, has argued the case for speculation.⁶ In his opinion, speculative transactions in effect provide an economy with a mechanism whereby temporary surpluses or deficits in the balances between demand and supply are absorbed or met. Even when changes on the markets are perceived as permanent or produced by fundamental factors, speculation will hasten the adjustment of the economy towards a new equilibrium. Nicholas Kaldor, in particular, has discussed the conditions under which speculation contributes to economic stability and when it has a disturbing effect on a state of equilibrium or a dynamic movement towards equilibrium.⁷ Speculation, assuming a competitive market among speculators, has a stabilizing function through dampening fluctuations in market price and speeding the adjustment process towards a new equilibrium. The market's efficiency is increased and more capital is brought to the market. Even where speculation is initially destabilizing, the price will eventually settle around its equilibrium value, for the speculators who consistently make judgement errors will incur losses and be forced out of the market. Thus, it is argued, speculation can only temporarily affect prices and it can not raise the price level above that which the market would arrive at anyway in the long run under competitive conditions. Of course, "temporarily" can be a rather long period of time on the real estate market where holding of land can extend over many years. Yet, when considering the longevity of real property, the effects of speculation are still temporary and the classical economic theory on speculation still holds.⁸

In the short term, speculation may drive prices up above the long-run equilibrium level — economic history can recite several such "speculative booms."⁹ But then again, such market behavior is not confined to strictly speculative markets. (Recall, for instance, the classical cobweb — or hog cycle — example of economic textbooks.) Eventually, the highest price speculator can extract from a buyer is that which leaves no consumer surplus, i.e., the price at which marginal revenue to the buyer is exactly equal to the price. Thus, speculation per se cannot drive prices above the level which would prevail in the absence of speculation, assuming a competitive market among speculators. It will, however, accelerate the process.

In a monopolistic market, of course, the price would in general be higher than that prevailing under competition. But how much higher is a matter of relative

6. Milton Friedman, "The Case for Flexible Exchange Rates," in his Essays in Positive Economics (Chicago: The University of Chicago Press, 1962). Note, however, that there are many economists who in general disagree with Professor Friedman.

7. Nicholas Kaldor, "Speculation and Economic Stability," in his Essays on Economic Stability and Growth (London: G. Duckmorp, 1960).

8. Lawrence B. Smith, "The Ontario Land Speculation Tax: An Analysis of an Unearned Increment Land Tax," Land Economics, Vol. 52, February 1976, p. 3.

9. Markusen and Scheffman, op. cit., p. 39.

bargaining strengths (and tactics) among the sellers and buyers and cannot be settled by a priori considerations.¹⁰ Monopolistic behavior in the real estate market involves the subject of market power (or market concentration) and should be regarded as intentional restriction of supply to achieve monopolistic profit, not as speculation.¹¹ Ceteris paribus, the restriction of supply, whatever its motives, increases the price above the competitive equilibrium price (except for in the case of extreme economies of scale).

Speculation can change the utilization of an asset from a lower to a higher yield activity and thereby raise the price above the old equilibrium price. For example, speculators may buy into a low-density residential neighborhood anticipating that the location will become attractive for high-density use. They may even pay more for the properties than the current, low-density use would warrant (cf., the discussion in connection with equations (1) and (2) above). Eventually, the speculators will have assembled so much land that, acting in their common interest, they will be able to force the change in land use. What in fact has happened is that the speculators have enabled a higher utilization of the same physical product but the demand curve lies further to the right than for the previous use — hence, the higher price. Whether or not this is socially desirable depends upon non-economic arguments and value judgements.

Do speculators perform a useful economic function? Clearly Friedman and Kaldor, among others, think so. The professional, successful speculators are rewarded by the market for guessing correctly about the future. But they, like any other economic actors, are rewarded only as long as there is a demand for their goods and services. This again implies that there must be some value, greater than the cost, in their activities. Examples of such "valuable" aspects of speculation besides those already mentioned (speeding up the adjustment process, dampening oscillations, and infusing capital to the market) are absorption of risk in connection with development and improvement of the efficiency of the land assembly function.¹²

10. The classical reference here is F. Y. Edgeworth, "On the Determinateness of Economic Equilibrium" in his Papers Relating to Political Economy, Vol. II (London, 1881).

11. Lawrence B. Smith, op. cit., p. 4.

12. See Markusen and Scheffman, op. cit., Chapter 4: "Speculators who actually hold undeveloped land must on average be less risk averse than developers, since the probability distribution of the return to their holdings must be less favourable than the probability distribution of returns on developers' holdings of undeveloped land Therefore since the required rate of return for bearing risk is a cost which will be reflected in the price in developed land, a shifting of risk to more risk averse developers will eventually be reflected, in the long run, in a higher price for developed land, and consequently, a slower rate of development. The fact that speculators probably also improve the efficiency of the land assembly process reinforces this conclusion. Therefore, as in Chapter 3, we conclude that the speculation tax will impair the efficiency of the land market (if it is competitive) in the long run," p. 54.

Turning now to the spacial aspects of speculation, the following empirical research results are of interest. Speculation may be expected to lead to selective withholding of land from development, thereby directing the regional demand to less accessible land further away from a given center, that is, contributing to urban sprawl. On the other hand, the increasing prices for land caused by speculative expectations will encourage developers to use less land and so to increase densities. Speculation may therefore result in urban sprawl with higher density peripheral centers interspersed with low intensity land uses.¹³

Despite frequent objections to such development, it is not totally devoid of merits: the scattering of development prevents the growth of large, monotonous residential areas,¹⁴ and sprawl retains some flexibility for future development,¹⁵ for example, by reserving land for more intensive uses which could under certain conditions prove more efficient for the society in the long run.¹⁶

Speculation not only affects land but also its improvements. Buildings, or groups of buildings, are bought and often remodelled or refurbished, or demolished and replaced by new structures. The previous use is frequently replaced by a new, more intensive, one. Even when the use and the occupants remain the same, a higher rent is typically charged. Eventually this leads to a change in the neighborhood, the new occupants, be they businesses or residents, generally having higher incomes than the previous occupants. In the process, however, the building stock is upgraded and the property tax base increased.¹⁷ When speculation drives up individual housing prices, the values as well as the assessments of all properties in the neighborhood eventually increase. Those who suffer in the process include renters living on fixed incomes and those who may have been enjoying a consumer surplus when rents stayed below their full economic potential.

Undoubtedly then, speculation affects income distribution. As to how and to what extent, there are few theoretical and empirical studies on which to draw.¹⁸ In general, however, insofar that speculators perform a "useful" economic function, as argued above, they increase the aggregate wealth and efficiency of the

13. These hypotheses have been found valid for the general case in John R. Ottensmann, "Urban Sprawl, Land Values and the Density of Development," Land Economics 53 (November, 1977): 389-400.

14. Jack Lessinger, "The Case for Scatteration: Some Reflections on the National Capital Region Plan for the Year 2000," Journal of the American Institute of Planners 8 (August, 1968): 159-169.

15. Ronald R. Boyce, "The Role of the Property Tax as a Constraint to Urban Sprawl," Journal of Regional Science 8 (August, 1968): 199-207.

16. James C. Ohls and David Pines, "Discontinuous Urban Development and Economic Efficiency," Land Economics 51 (August, 1975): 224-234.

17. See Richard F. Muth, "How the City Benefits," San Francisco Chronicle, 19 January 1978, p. 6.

18. Markusen's and Scheffman's study of land ownership in Toronto (op. cit., Chapter 5) touches upon this issue.

economy. Whether or not this gain is distributed equitably is again impossible to determine a priori but must remain the subject of empirical research and value judgements. However, any economic exchange must involve some net benefits to both parties (otherwise it would obviously not take place). Thus, it can be said that not all the net benefits of speculative activity remain in the hands of the speculators.

This study is not concerned with the income distribution effect of speculation (although the question of whether speculation has affected minorities differently is addressed). Rather, the purpose is to investigate the character and extent of BART-induced speculation to determine whether speculation in connection with new major rail transportation improvements is an issue of such proportions that it would have design and policy implications for future mass transportation systems.

2. RESEARCH QUESTIONS AND STUDY ISSUES

OBJECTIVES

The present study investigates the prevalence of property acquisition and holding to profit from the sale of the property, and of conversion and intensification of land use because of the influence of BART. Specifically, the focus is on determining the nature, timing, and extent of speculative property acquisition and retention near BART stations. We will attempt to determine whether speculative activity has been different in minority neighborhoods.

Understanding where and how speculation results from transportation development is useful to both transportation and land-use planning. It demonstrates where, when, and to what degree pressures for land-use conversion and intensification develop, and indicates how and where development procedures and regulations suppress or encourage speculation. Changes in property prices and rents are subject to a separate study.¹⁹

APPROACH

Following the derivation in the previous section (eg., (1) and (2)), direct empirical analysis of speculation could in principle take the form of comparing actual prices with imputed prices which would be calculated on the basis of current property uses and locational advantages (i.e., without regard to BART). An actual price higher than the imputed price would indicate speculation. However, this would involve a complete real estate appraisal of each sampled transaction, an effort which was clearly outside the resource limitations of this study. In addition, especially in the case of commercial or industrial property, the actual price often reflects more than just the value of the property itself (furnishings, and machinery may be included, tax considerations may influence the price, etc.). In the case of residential properties, an increase in market price above the inputed value could, and probably would in most cases, merely reflect the increased locational value of a property near BART and thus have nothing to do with speculation. A different approach therefore had to be devised. It is comprised of in-depth interviews with key informants and statistical analysis of land use data indicative of speculation. As explained in the "Introduction," by combining these two approaches we are reasonably well assured that we have covered any speculative activity to the extent necessary for the objectives of this study.

Key informants interviewed included a minimum of three persons familiar with whatever speculation activity may exist at each station. They were chosen for their known professional knowledge of both the issue at hand and the station area analyzed. A total of 50 key informants provided relevant information. These included specialists in the sale and development of residential and commercial real estate as well as the principal members of city and county planning

19. John Blayney Associates/David M. Dornbusch & Company, Inc., Study of BART's Effects on Property Prices and Rents, Draft Final Report (Berkeley: BART Impact Program Land Use and Urban Development Project Working Paper, July 1978).

staffs who are most familiar with sales and development activities. Many of the interviews were conducted with the same key informants interviewed in the other work elements of this research project, in which case the interview was done by telephone — otherwise all interviews were done in person. A copy of the interview form used in the interviews specifically undertaken for the present study is presented as Appendix D. We note, however, that the form was not rigorously followed but was used more as a frame for a free-format interview. The answers were therefore not tabulated but verbally synthesized together with the information from interviews which had followed a totally different format (see Appendix A for the actual analysis).

Direct data on speculation are, as indicated, not available. Instead, we have compiled historical information on certain manifestations of speculative activities. These include property turnover, changes in owner occupancy, zoning variance requests, and use conversions. Intermittent uses would also suggest speculation, but sufficient documentation could only be obtained through interviewing so extensive that it could not be considered. All tabulated data are presented in Appendix A; the data collection is described in detail in Appendix E.²⁰

Each indicator was tabulated by distance from the nearest BART station on the theory that, if BART had influenced speculation in the station areas, the indicator would be distributed so that higher frequencies would occur closer to the station than further away. Specifically, the following model was postulated for each indicator denoted by X ,

$$(3) \quad X = a + b\left(\frac{1}{DB}\right) + u$$

where DB is distance to BART, in feet

a and b are regression parameters

u is a random error term assumed to be normally distributed with zero mean and constant variance.

The function's general form is depicted in Figure 1.

A hyperbolic rather than straight-line relationship was chosen to reflect both theoretical considerations and previous experiences with similar attenuation

20. Since much uncertainty is involved in speculative transactions, the speculator often cannot find a conventional (institutional) source of mortgage credit and must therefore resort to other forms of financing. An examination of deeds of trust, which identify the lender, could therefore have provided yet another indicator of speculation as Martin Gellan, a reviewer of the first draft of this report, suggests.

phenomena.²¹

The specific hypothesis tested is that the regression coefficient b is, in each of regressions, larger than zero. The appropriate²² statistical test for this task is a one-tailed t-test where the rejection of the null-hypothesis that $b = 0$ indicates failure to reject the hypothesis that proximity to BART exercises a positive influence on the occurrence of the dependent variable (sales, owner occupancy, etc.).

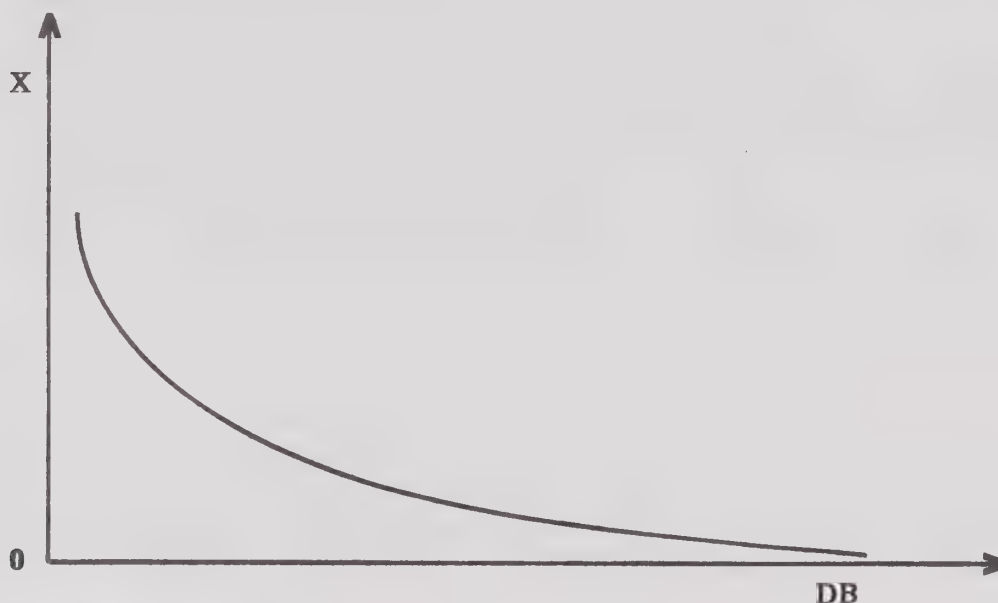


Figure 1. The General Form of the Function $X = a + b\left(\frac{1}{DB}\right)$.

The sales and variance-request data also permit us to distinguish between pre- and post-construction periods. In these cases, different regressions were estimated for each period and the regression coefficients were pair-wise tested using a two-tailed t-test to see whether there had been significant changes (either increases or decreases, hence a two-tailed test) in the indicated trends. All regressions are presented in Appendix A.

None of the above tests conclusively determine whether or not there has been

21. Among others — Caj O. Falcke and Lawrence W. Kozimor, The Impact of Water Quality On Residential Property Prices, prepared for the National Commission on Water Quality (San Francisco: David M. Dornbusch & Company, Inc., 1975); Y. Oron, D. Pines and E. Sheshinski, "The Effect of Nuisances Associated with Urban Traffic on Suburbanization and Land Values," Journal of Urban Economics 1, 1974; R. W. Vickerman, "The Evaluation of Benefits from Recreational Projects," Urban Studies 11, 1974; as well as numerous applications of the basic gravity model.

22. Provided that the assumptions in equation (3) regarding the distribution of the error term u are at least approximately correct.

speculation at any given station. In fact, in some instances (for example, property sales) both a high and a low frequency could indicate speculation. However, taken all together and in combination with the key informant interviews, conclusions about the occurrence of speculation and its relationship to BART can be formed for each station area. These station syntheses are reported in Appendix A.

Finally, the findings for each station area are synthesized and conclusions are drawn regarding the entire BART service area. Expectations and implications for other cities are presented in Chapter 4 and under "Summary and Findings." Analyses were conducted for the areas surrounding each of eight BART stations: Mission-San Francisco, Powell Street-San Francisco, Richmond, 19th Street-Oakland, Fruitvale, Fremont, Rockridge, and Walnut Creek. These station areas comprise representative cross-sections and mixes of property types and are sufficiently distributed throughout the BART system to provide a reasonably complete picture of BART-induced speculation. They also include those station areas where some of the greatest BART-induced speculation is thought to exist.

LIMITATIONS OF THE ANALYSIS

Since no direct data on speculation exist, our approach was to combine key informant interviews with quantitative analyses of indicative data. If the hypothesis that BART influenced the speculation indicators was not rejected, and if the opinions of knowledgeable informants conformed to that finding, we concluded that BART-related speculation had occurred. The potential case of substantial contradictory information did not occur.

An inherent limitation of the key informant interview technique is that the method necessarily relies on the informants' memories and personal biases. It is pertinent to note that the initial "selling" of BART before the referendum in November, 1962, BART's and subsequent public relations efforts may have generated many preconceptions about what effects the system would have. We were concerned that peoples' sense of BART has continued to be influenced by these early popular opinions rather than by the actualities of the construction and functioning of BART. The information gathered from key informant interviews, therefore, was regarded critically and was used to supplement and clarify the results of our other analyses.

Another limitation of the key informant interview technique is that often informants find that they cannot articulate the relative importance of the many factors which enter into a decision. Decisions regarding speculation are based on a number of factors, many of which are related. Most informants can list the factors which were likely considered, but cannot rank them. Therefore, our conclusions must be limited to whether BART has been one of many important considerations in speculative decisions. Consequently, we were not able to conclusively assess the influence of BART relative to other significant factors.

The statistical analyses of the indicative data are all based upon regression models of the very simple type described in equation (3) above. Obviously more than one explanatory variable would be needed in most cases to satisfactorily explain the variation in the dependent variable, if that were the objective. Here, however, we are only interested in the significance of the regression coefficients

of the distance-to-BART variable. This only requires an unbiased and reasonably efficient estimate of the coefficient, b , which does not depend upon the overall explanatory power of the model, and the omitted explanatory variables must be distributed independently of $1/DB$.²³ In instances where covariation could be expected, for example in Oakland where the redevelopment effort in the downtown has been concurrent with the construction of BART, the conclusions from the simple regression model must be suspect and consequently greater weight has to be given to other, independent evidence. Such care was exercised wherever deemed necessary.

Another limitation of the data analyses was that the number of observations was often small. The variation in the data was further reduced by the fact that due to limited reserves we had to be content with classifying the observations by distance zone rather than being able to measure the exact distance from each individual observation to the nearest BART station. The degrees of freedom therefore became very small and further prevented the inclusion of other explanatory variables in the regression model.

Despite these limitations, the approach has proven fruitful in that sufficient invariances have been detected to allow useful conclusions to be made with reasonable confidence.

23. For a discussion, see Falcke and Kozimor, op. cit., p. 24; or H. Theil, Principles of Econometrics (New York: John Wiley & Sons), pp. 548-550.

3. FINDINGS--BART'S EFFECTS ON SPECULATION

San Francisco has historically been the most important center in the Bay Area. Oakland and San Jose constitute secondary centers, and suburban communities (some with their own small centers) radiate from each.

The location of the suburban areas is constrained to a great degree by the Bay Area's topography. San Francisco lies on the tip of a peninsula and is accessible from the Marin County suburbs only by ferry and the Golden Gate Bridge and from the East Bay communities only by bridge and BART. San Mateo County, on the other hand, shares the Peninsula with San Francisco, and its development began early relative to the rest of the Bay Area.

Much of the Bay is ringed by hills, and suburbs have filled the narrow flatlands between the Bay and the hills. Present urbanization, therefore, rings the Bay, with major development breaching the hills only in Central Contra Costa County, an area connected to the rest of the Bay Area by a major freeway and by BART.

One portion of the Bay Area experiencing rapid growth is not served by BART at all. The South Bay area, Santa Clara County, has grown from 640,000 persons in 1960 to 1,144,324 in 1975,²⁴ by far the largest increase in the Bay Area. Clearly, BART has not been a necessary condition for growth in this county or for San Jose, its commercial center.

Other suburban areas which are served by BART exhibit mixed growth rates. Cities on the Concord line (Orinda, Lafayette, Walnut Creek, Peasant Hill and Concord) and Fremont line (San Leandro, Hayward, Union City and Fremont) have grown rapidly since 1960. Cities on the Richmond line (Berkeley, Albany, El Cerrito and Richmond) and neighborhoods on the Daly City line (San Francisco neighborhoods and Daly City) are older communities, and they have not grown dramatically during the past fifteen years. BART's role in speculation in the region is discussed below.

Figure 2 shows the location of areas where there appears to have been some type of BART-induced speculation. Areas where there apparently has been no BART-related speculation are also indicated. Unmarked areas along the BART line signify areas which have not been studied or otherwise remain uncertain.

Speculative activity was found in the vicinity of nearly all the BART stations studied. The stations in downtown San Francisco and in southern Alameda County, where no speculation was apparent, were notable exceptions. The activity has tended to be more intensive nearer the stations, and the greatest amount of activity has occurred from downtown Oakland to the end of the Concord line. Most speculation occurred during the period of station construction, when the expectations about BART were at their peak. Except in Richmond, speculative

24. Association of Bay Area Governments, Provisional Series 3 Projections, Summary Report, Appendix A: "1975 Data Base" (San Francisco: ABAG, March, 1977), p. A4.

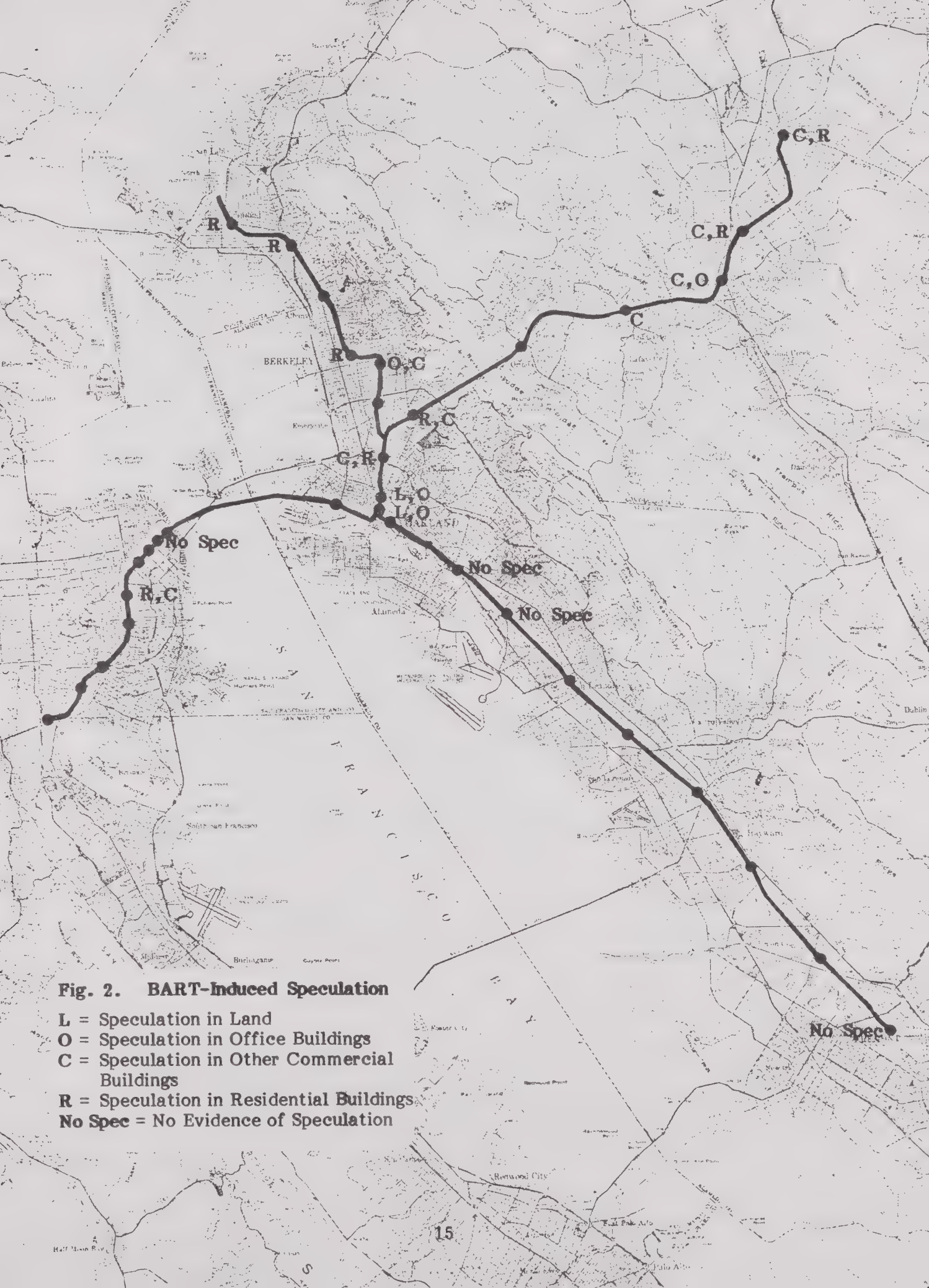


Fig. 2. BART-Induced Speculation

- L** = Speculation in Land
- O** = Speculation in Office Buildings
- C** = Speculation in Other Commercial Buildings
- R** = Speculation in Residential Buildings
- No Spec** = No Evidence of Speculation

activity vanished soon thereafter.²⁵

Because no direct data on speculation exist, no direct quantitative measure of the amount of speculation can be given. However, nowhere was speculation extensive or prominent enough in terms of the number of, or size of, properties involved to cause noticeable impacts on land use in terms of intermittent land use or vacant lots. Although speculation occurred in all forms of real estate, there was no evidence of large-scale speculative buying or holding of land ("acre speculation" as one informant called it).²⁶ Small, commercial properties or residential structures were mainly subject to speculation, although some large office construction projects apparently were partially motivated by BART-related speculation. Indications are that, generally, where speculation did occur, anticipated profits have not yet been realized.²⁷

No indications were found that the BART-related speculation was any different if it occurred in a minority neighborhood than elsewhere. Neither did there appear to be any differences if minorities were involved in the speculative activity.²⁸

A review of the speculative activity, and in some instances its absence, in the study areas illustrates community differences. Speculation occurred in the suburban areas along the BART line in eastern and central Contra Costa County but not in equally suburban southern Alameda County. A possible explanation for the difference might be that Walnut Creek and the other areas along the Concord line were beginning to be "ripe" for suburban development at about the same time BART was built, and moreover, that these communities are oriented toward San Francisco. In contrast, southern Alameda County is considerably further away from San Francisco and was in many aspects — among them, employment — more oriented toward San Mateo and Santa Clara Counties across the Bay and San Jose in the south, none of which were to be served by BART. It is also possible that the tight controls on land use imposed by the City of Fremont have contributed to the lack of short-term development expectations there, whereas Walnut Creek has, at least until lately, indicated more of an attitude to accommodate the market demand. Regardless of land-use controls, no other

25. It is possible that speculation declined not only due to decreasing expectations, but also because of increasing holding or carrying cost for real estate.

26. In general, the risk factor in the appraisal of any real estate investment is very important. This tends to discourage the professional, large-scale developer from undertaking investments which are based primarily on uncertain anticipations and therefore involve large risks, i.e., speculation.

27. Specifics of certain examples of speculative transactions can be found in Appendix A, pp. 41 and 59.

28. Studies by David Prowler, housing specialist with the San Francisco Human Rights Commission, reportedly show that speculation is city-wide and cannot be identified with any one group or neighborhood, thus confirming the lack of relationship between speculation and racial grouping found here. See San Francisco Chronicle, 19 January 1978, p. 6.

station area in southern Alameda County experienced noticeable speculation which may be a reflection of little anticipated shifts in demand due to BART in southern Alameda.

The lack of activity near the stations of Fruitvale and Coliseum is most probably due to either little expectations of future development, BART-related or not, around these areas or the risk involved is perceived to be high enough to create a comparative disadvantage for these station areas.

Another remarkable difference occurs between the two major central business districts (CBDs) in the BART service area, downtown San Francisco and downtown Oakland. The former seems to have escaped speculation as defined in this study altogether, while the latter has experienced some speculative activity in office buildings and land for commercial purposes.²⁹ The most likely reason for the difference appears to be that the long-term interests directed toward the San Francisco CBD have outbid any speculative interests in available property. In addition, the capital needed, especially in San Francisco, might have been enough to exclude potential speculators. While expectations with respect to future development in Oakland did not appear to be absent, few (except the City of Oakland, itself) have been willing to invest on a twenty- to thirty-year basis. That has left the "field" open for short-term, speculative interests.

Proceeding north from downtown Oakland along the Richmond line, the speculation continues but gradually changes character to include more and more residential structures, with the exception of downtown Berkeley where the speculation reportedly occurred in office structures. Finally, from the North Berkeley station northward, all speculative activity occurred in housing.

In Richmond, at the end of the line, some speculation might still be occurring. Direct service from Richmond to San Francisco, however, has not yet begun, so expectations may still be higher in Richmond than elsewhere in the East Bay and therefore account for the continuing speculation. Living in the Richmond station area are large groups of minorities. Nothing indicates, however, that either the type or the amount of speculative activity there would have been any different from other areas where residential speculation occurred.

29. Appendix A, "Station Area Oakland," gives a concrete example of a transaction believed to have been speculation, see p. 41.

4. EXPECTATIONS AND IMPLICATIONS FOR OTHER CITIES

Major transportation improvements will always create expectations of increased development in those areas where access is significantly improved and where market demand exists for new residential and commercial space. In the case of BART, expectations were probably even higher because of the grand, new technology which was to be employed. The No-BART Alternative would not employ any new technology and assumes that only incremental improvements occur in the region's transportation system, with no major highway construction nor any major new transit routes.³⁰ Therefore, the No-BART Alternative would probably not have created the same level of expectations, nor the same concentration of expectations, experienced around some BART station areas. Speculation under this alternative would probably be less than under the present system. Neither is it likely, if highly sophisticated technology were to be applied again, now that the limitations of such technology are all too well known, that similar degrees of expectation and speculation would occur in other cities. BART appears to have had a much smaller effect and/or slower impact on land uses than initially expected, and many of the BART-induced speculative ventures have reportedly not proven profitable. The knowledge of this experience is likely to similarly reduce expectations, and therefore speculation, related to major transportation improvements in other cities. Some speculation will nevertheless remain, and public measures to control unwanted aspects of speculation near station areas may be warranted, although the extent of speculation appears so small that far reaching intervention in the market processes would probably have a net adverse effect in the long run because it would also prevent the beneficial aspects of speculation. Ultimately any policy which does not lower the demand for housing or increase the supply will not reduce the price for housing.

It appears that speculation occurs in continuum between a very low and a very high risk situation. In San Francisco, the economic climate and adopted city policies (such as zoning and height bonuses) reduced the risk by making the conditions for long-term development very stable. In Walnut Creek, the market demand in the vicinity of the station was not particularly strong so development there implied some risk and did encourage speculative activity. The other end of the continuum is represented by Fremont, where the city's policy to require high density housing near the station created a high-risk situation for development since there was virtually no demand for such housing at the time. Consequently, no development nor speculation took place near the station (the situation is now changing with one developer going ahead with plans to build on one of the vacant lots — see Appendix A for details).

30. Metropolitan Transportation Commission, "Rationale and Specifications for the No-BART Alternative" (Berkeley: BART Impact Program Land Use and Urban Development Project Working Note, September, 1976). (Mimeo)

APPENDIX A. ANALYSIS OF EIGHT BART STATION AREAS

This appendix presents the analyses of key informant interviews and data which may indicate speculation. When taken individually, none of these pieces of information and tests conclusively determine whether or not there has been speculation at any given station. Although statistical theory has not been developed to allow us to formally add up the individual test results, together with the information provided by the key informants, they constitute the quantitative frame within which the synthesis for each station area is formed. If conflicting evidence develops, all information for that station area is subjectively weighted in the synthesis.

The reliability of the synthesis in terms of its risk or confidence level can be no greater than that of the weakest of the evidence forming its parts. All the statistical tests are performed at a five percent risk level, but it is unknown what confidence one can reasonably ascribe to the key informants' information. The informants, however, have all been chosen for their known professional familiarity with both the issue at hand and the station area analyzed. It would therefore appear reasonable to assume that at least 90 to 95 percent confidence can be attached to their statements in most cases. It follows that the various syntheses are presented so that, if based upon different samples, the same conclusions could be expected in at least nine out of ten cases.

The analysis of each of the eight study areas follows the same format. The synthesis for an area is followed by a summary of the interviews highlighting the most informative statements of fact and opinion. Each table is accompanied by an analysis of trends in the data. The amounts of real estate transactions, change in homeownership, requests for major zoning variances, and change in land use are regressed against the reciprocal of the distance to the BART station (denoted by $1/DB$).¹ The alternative hypothesis that the resultant regression coefficient, b , is larger than zero (implying an inverse relationship to proximity to the station) is tested using a conventional one-tailed t-test at the previously selected five percent risk level. Rejection of the corresponding null hypothesis that there is no such distance relationship is indicated by an asterisk, *, appended to the reported value for the t-statistic, t_b .

The sales and variance request data also permit us to distinguish between pre- and post-construction periods. In these cases, different regressions are estimated for each period and the regression coefficients are pairwise tested using a two-tailed t-test to see whether there have been significant changes in the indicated trends. The resultant t-statistic, $t(\text{difference})$, is again starred if the two tested regression coefficients are significantly different.

-
1. This simple formulation with only one explanatory variable is entirely adequate for our purposes when we assume that all other possible explanatory variables which have been omitted from the model are orthogonal ("independently distributed") to the included variable. See H. Theil, Principles of Econometrics (New York: John Wiley & Sons), pp. 548 - 550 for a further discussion.

For each regression, the simple correlation coefficient between the dependent variable and $1/DB$, and the standard errors of the estimated parameters are reported along with the sample size, N . The standard errors are either denoted by s_a and s_b where a refers to the estimated constant and b to the regression coefficient, or they are reported in parenthesis immediately below the corresponding estimated parameter. Note that, when squared, the correlation coefficient, r , indicates the proportion of the variance in the dependent variable explained by the simple model.

The quantitative information in each table is summarized in the text adjoining the table.

Station Area: Mission & 24th Street, San Francisco

Station Synthesis: Throughout the study period there has been speculation in the area. This activity has been increasing, with the possible exception of the most recent years. There is, however, little evidence that any speculative activity was related to BART except for the early period before BART service began when some, but not much, speculation could be attributed to BART.

Station Analysis: Five out of the six persons interviewed about this station area thought that there was speculative activity in the area. None, however, thought that it was prominent. Specific properties mentioned by one informant were the Redlick Building, Hunt's Donut Shop, and MacDonald's. Two of the informants believed that the holding of scattered lots throughout the area was due to zoning and parking requirements enacted by the San Francisco Planning Commission at the request of neighborhood organizations. Another informant thought that the speculation stemmed from attempts to invest in the Mission District's Victorian-style townhouses, which are in limited supply elsewhere in the City. A savings and loan regional loan officer for the area stated that the speculation had declined since the lending institutions began to attach a premium to loans which they determined would be used for speculative activities (i.e., absentee ownership for short-term holding).

There is no evidence of a decrease in the demand for either residential or commercial space in the area. At the same time there has been very little new construction in the area, and fires have further decreased the supply. There were 132 fires² alone, around the 16th Street station in 1974-76. Prices and rents are rising despite rather strong community efforts to keep rents down and encourage new construction.

Sales activity has been greater near the BART station than further away, particularly in the period before BART construction, but the distance relationship is not statistically significant (cf. Tables A.1 and A.2). The activity clearly declined during the construction period but although this occurred over the

2. Fourteen of which were determined to be arson (San Francisco Fire Department).

TABLE A.1. REAL ESTATE SALES

Distance From BART Station	Sample Size	Pre-BART		BART Construction		Post-BART	
		No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year
<300'	16	16	.134	3	.042	8	.083
300'... 499'	11	4	.048	1	.019	1	.016
500'... 749'	12	8	.090	2	.037	8	.112
750'... 999'	13	8	.084	1	.018	13	.167
1000'...1499'	32	20	.085	7	.048	23	.120
1500'...1999'	23	29	.170	9	.085	14	.102
2000'...2500'	15	13	.118	4	.059	9	.100

TABLE A.2. ANALYSIS OF COEFFICIENTS AND STATISTICS FOR REAL ESTATE SALES EQUATION

$\frac{\text{Number of Sales}}{\text{Parcel} \cdot \text{Year}} = a + b(1/\text{Distance to BART})$								
Period	b	s_b	t_b	a	s_a	r	N	t(difference)
Pre-BART	1.44	8.11	.18	.10	.02	.08	7	Pre-Construction/Construction: 1.14
Construction	-2.90	4.59	-.63	.05	.01	-.27	7	Construction/Post-Construction: 1.10
Post-BART	-7.30	8.68	-.84	.11	.02	-.35	7	Pre-Construction/Post-Construction: 1.80

a and b are regression coefficients

s_a and s_b are the corresponding standard errors of the coefficients

t_b is the t-statistic for $H_0: b = 0$ with $N - 2$ degrees of freedom

r is the simple correlation coefficient between the dependent and the independent variable

t(difference) is the t-statistic for the difference between the regression coefficients b for the indicated periods:

$$t = \frac{b_1 - b_2}{\sqrt{\frac{2(s_{b1}^2 + s_{b2}^2)}{2N - 2}}} \text{ with } 2N - 2 \text{ degrees of freedom}$$

Mission & 24th Street, San Francisco

entire area, there was less of a decrease near the station. In the post construction period, the sales activity has become negatively correlated to proximity to the station. This might reflect a declined interest in, or supply of, real estate close to the station.

As early as the late sixties, young adults began to move into the area, buying and renovating old houses, particularly the Victorian-style ones for resale. In 1976, a total of 105 home improvement loans were made in the Mission with a loan average of \$5,400. However, no clear link between these improvements and BART could be established.

Quite apart from the marked jump in alleged "homeownership" which took place when the homeowner exemption rose to \$1,750 in 1973, the analysis in Table A.3 shows that homeownership has actually increased during the 1970's, especially near the station. The trend may reflect the increased attractiveness of the neighborhood reported by our informants, or it may reflect decreasing speculation, or a combination of the two factors.

Table A.4 indicates that there were clearly more requests for zoning variances near the station, but the time of the requests does not point equally clearly towards a conclusion that the difference is attributable to BART; requests during the construction period, 1967 to 1972, were not statistically significantly lower than at other times.

Although most of the informants felt that there had been very few land use changes in the area, there were in fact a number of changes, and they have been more frequent near the station, as indicated in Table A.5.

None of the informants knew of specific sales of real estate in the area where the price paid would have seemed out of line with the market at the time of the sale, although two out of the three informants asked this question thought that there had been a few such sales.

Although more Latinos and other minorities might have recently moved into the area, none of the key informants indicated that minorities were affected differently from others by the speculative activity in the area.

Mission & 24th Street, San Francisco

TABLE A.3. NUMBER OF HOMEOWNER EXEMPTION CLAIMS

Year	DISTANCE FROM BART STATION					
	<300'	300' - 499'	500' - 749'	750' - 999'	1000' - 1499'	1500' - 2000'
1969-70: #	11	19	17	95	56	25
1970-71: #	12	21	16	91	50	29
% Δ	8	-11	- 6	- 4	-11	16
1971-72: #	13	17	18	99	50	24
% Δ	8	-16	13	9	0	-17
1972-73: #	13	16	17	105	51	28
% Δ	0	- 6	- 6	6	2	17
1973-74: #	16	23	26	129	67	37
% Δ	23	44	53	23	31	32
1974-75: #	18	24	26	135	63	37
% Δ	13	4	0	5	- 6	0
1975-76: #	19	25	25	145	64	35
% Δ	6	4	- 4	7	2	- 5
1976-77: #	25	25	23	153	70	34
% Δ	32	0	- 8	6	9	- 3
1977-78: #	28	27	24	143	69	35
% Δ	12	8	4	6	- 1	3

$$\begin{array}{l} \text{Net \% } \Delta \\ 1973 \dots 1978 \end{array} = \begin{array}{l} -12.81 + 12914.40(1/\text{Distance to BART}) \\ (5.23) \quad (1724.68) \end{array}$$

$$r = .97 \qquad N = 6 \qquad t_b = 7.49^*$$

Mission & 24th Street, San Francisco

TABLE A.4. REQUESTS FOR ZONING VARIANCE

<u>Distance From BART Station</u>	<u>No. of Requests</u>	<u>Requests Per 1000 Sq. Ft.</u>	<u>Year of Request</u>	<u>Number of Re- quests Per Year</u>	
				<u>Average</u>	<u>Standard Deviation</u>
<500'	5	6.37	1960 to 1966	1.71	1.38
500'... 999'	1	.42	1967 to 1971 (Construction Period)	.80	.84
1000'...1499'	7	1.78			
1500'...2000'	11	2.86	1972 to 1977	1.83	1.72
>2000'	3	..	t-statistic for difference between construction and nonconstruction =		1.03

TABLE A.5. NUMBER OF PARCELS WITH CHANGED
LAND USE BETWEEN 1965 AND 1977

<u>Distance From BART Station</u>	<u>Number of Changes</u>	<u>Changes Per Million Sq. Ft.</u>
<500'	8	10.2
500'... 999'	8	3.4
1000'...1499'	7	1.8
1500'...2000'	11	2.0
>2000'	0	0

$$\frac{\text{Changes}}{\text{Million Sq. Ft.}} = -.30 + \frac{2641.97(1/\text{Distance to BART})}{(.45) (233.40)}$$

$$N = 5$$

$$t_b = 11.32^*$$

$$r = .99$$

Station Area: Powell Street, San Francisco

Station Synthesis: During the study period, there does not appear to have been any significant speculative activity in the area, BART-related or otherwise. Among the reasons for this are the increased attractiveness of the area (especially Market Street) for big corporation headquarters and other major office construction, new city policies and regulations discouraging fast turnovers. These have had the effect of increasing property prices and encouraging long-term commitments to the area. Thus, the relative favorableness of long-term over short-term investment has been such that potential speculators have been outbid.

To the extent that BART has added to the attractiveness of the Powell Street/Market Street area for new commercial development, and to the extent that BART itself represents a long-term commitment to the area, BART can be said to have had an antispeculative effect in the area.

Station Analysis: None of the three persons specifically interviewed about this area felt that there had been any speculation in downtown San Francisco. Although there had been many real estate transactions and much land use intensification, these were not indicative of speculation as defined here but rather reflect the increased attractiveness of the area. Property prices and assessments were gradually pushed up so high that small property owners found it attractive to sell their properties. Another contributing factor, according to two of the informants, was that for many the depreciation on the buildings had run out so they were eager to sell for tax reasons. When the properties changed hands, they went to new and/or more intensive uses; the Market Street area transformed from a retail/residential to a commercial/retail area.

The analysis of real estate sales in Table A.7 does not reveal any systematic relationship to the BART station; even during the construction period, the sales were scattered randomly over the area.

As evidenced in Table A.8, the increase in the number of persons who claimed a homeowner's exemption was remarkable when the exemption was increased to \$1,500 in 1973. Soon thereafter, however, the numbers started to decline reflecting the transition to a predominantly commercial area. Neither the timing of the events nor the spatial distribution of the changes in homeowner exemption-taking suggests any relationship to the BART station.

As the analysis in Table A.9 shows, there were significantly more requests for zoning variances during the BART construction period than before or after BART construction, but these requests were fairly evenly distributed over the study area. Thus, it appears more likely that the increase in requests for variances was spurred by the zoning changes the City made in 1969 than by BART construction.

TABLE A.6. REAL ESTATE SALES

Distance From BART Station	Sample Size	Pre-BART		BART Construction		Post-BART	
		No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year
<300'	16	5	.042	5	.051	4	.058
300'... 499'	23	12	.070	11	.078	4	.040
500'... 749'	20	9	.060	3	.024	2	.023
750'... 999'	12	4	.044	6	.081	1	.019
1000'...1499'	22	6	.036	4	.029	9	.094
1500'...2000'	4	0	0	1	.041	2	.115

TABLE A.7. ANALYSIS OF COEFFICIENTS AND STATISTICS FOR REAL ESTATE SALES EQUATION

$\frac{\text{Number of Sales}}{\text{Parcel} \cdot \text{Year}} = a + b(1/\text{Distance to BART})$								
Period	b	s_b	t_b	a	s_a	r	N	t(difference)
Pre-BART	2.77	5.09	.54	.04	.02	.26	6	Pre-Construction/Construction: .38
Construction	1.52	5.25	.29	.05	.02	.14	6	Construction/Post-Construction: 1.09
Post-BART	-3.31	8.37	-.39	.07	.03	-.19	6	Pre-Construction/Post-Construction: .46

a and b are regression coefficients

s_a and s_b are the corresponding standard errors of the coefficients

t_b is the t-statistic for $H_0: b = 0$ with $N-2$ degrees of freedom

r is the simple correlation coefficient between the dependent and the independent variable

t(difference) is the t-statistic for the difference between the regression coefficients b for the indicated periods:

$$t = \frac{b_1 - b_2}{\sqrt{\frac{2(s_{b1}^2 + s_{b2}^2)}{2N - 2}}} \quad \text{with } 2N - 2 \text{ degrees of freedom}$$

Powell Street, San Francisco

TABLE A.8. NUMBER OF HOMEOWNER
EXEMPTION CLAIMS

Year	DISTANCE FROM BART STATION			
	<1000'	1000'- 1499'	1500'- 2000'	>2000'- <2500'
1969-70: #	0	0	4	5
1970-71: #	0	1	4	5
% Δ	0	..	0	0
1971-72: #	0	1	5	6
% Δ	0	0	25	20
1972-73: #	0	1	6	5
% Δ	0	0	20	-17
1973-74: #	3	9	22	15
% Δ	0	800	267	200
1974-75: #	4	11	24	16
% Δ	33	22	9	7
1975-76: #	4	11	30	13
% Δ	0	0	25	-19
1976-77: #	4	12	29	13
% Δ	0	9	- 3	0
1977-78: #	3	11	26	12
% Δ	-25	- 8	-10	- 8

$$\text{Net \% } \Delta = \frac{2.37}{(24.23)} + \frac{1550.26(1/\text{Distance to BART})}{(21327.61)}$$

$$r = .04 \quad N = 4 \quad t_b = .07$$

Powell Street, San Francisco

TABLE A.9. REQUESTS FOR ZONING VARIANCE

<u>Distance From BART Station</u>	<u>No. of Requests</u>	<u>Requests Per 1000 Sq. Ft.</u>	<u>Year of Request</u>	<u>Number of Re- quests Per Year</u>	
				<u>Average</u>	<u>Standard Deviation</u>
<500'	1	1.27	1960 to 1966	.14	.38
500'... 999'	4	1.70	1967 to 1973 (Construction Period)	.86	.69
1000'...1499'	4	1.02			
1500'...2000'	0	0	1974 to 1977	.50	.58
t-statistic for difference between construction and nonconstruction =					2.03

Table A.10 shows that, compared to the entire study area, there have been more land use changes since 1965 in the immediate vicinity of the Powell Street station, but in light of all the above-reported information on the area, this does not seem to be an indication of speculative activity. Rather it appears to reflect the general transition of the area from a retail/residential area to a commercial/retail center.

TABLE A.10. NUMBER OF PARCELS WITH CHANGED
LAND USE BETWEEN 1965 and 1977

<u>Distance From BART Station</u>	<u>Number of Changes</u>	<u>Changes Per Million Sq. Ft.</u>
<500'	14	17.8
500'... 999'	20	8.5
1000'...1499'	52	13.2
1500'...2000'	25	4.5
<2500'	13	1.8
$\frac{\text{Changes}}{\text{Million Sq. Ft.}} = \frac{4.08}{(2.88)} + \frac{3552.69(1/\text{Distance to BART})}{(1479.21)}$		
N = 5	t _b = 2.40	r = .81

Powell Street, San Francisco

None of the key informants knew of any real estate transactions in the area where the price paid was higher than could be justified out of proportion solely by the income of the property at the time of the sale.

Station Area: Richmond

Station Synthesis: The available evidence on speculation in the area is mixed. The most reasonable conclusion is that there has not been any significant speculation in land or commercial property but that, judging from the decreasing homeownership, some "small time" speculation might be occurring in residential property. Given that many areas around the station are dominated by minorities (primarily Blacks and secondarily Orientals), one might assume that minority persons are involved in these activities. None of the persons interviewed, however, was able to confirm this.

Station Analysis: Two key informants out of the seven interviewed about this area claimed that there had been some speculation in the station area. One had anticipated some speculation in the early stages of BART operation, but said that it did not materialize. Another informant was not aware of any speculation but "presumed there must have been some." Finally, two thought there had been no BART-related speculation in Richmond.³

In general, the informants reported that activity on the real estate market near the station has been low due to many factors, among them the 1968 riots and the development of the Hilltop Shopping Center at the expense of Richmond's downtown area. Presently there is a considerable amount of vacant land around the station. It is not increasing in value and it is offered at low prices, but the land is still not attracting developers. Most of the vacant land is controlled by the Redevelopment Agency.

As seen from Table A.11 and the analysis in Table A.12 below, real estate sales do not significantly increase nearer the BART station. Over the years the association has become even less significant. In the area in general, real estate sales have increased in the post-construction period. The increase might be related to the decline in homeownership, evidenced in Table A.13.

-
3. One person interviewed about real estate developments in the area made no reference to speculation.

TABLE A.11. REAL ESTATE SALES

Distance From BART Station	Sample Size	Pre-BART		BART Construction		Post-BART	
		No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year
<300'	2	5	.065	3	.061	5	.102
300'... 499'	8						
500'... 749'	22	8	.047	22	.203	20	.185
750'... 999'	18	9	.065	10	.113	15	.169
1000'...1499'	31	8	.033	15	.098	17	.112
1500'...1999'	16	7	.056	11	.140	11	.140
2000'...2500'	15	4	.034	7	.095	7	.095
>2500'							

TABLE A.12. ANALYSIS OF COEFFICIENTS AND STATISTICS FOR REAL ESTATE SALES EQUATION

$\frac{\text{Number of Sales}}{\text{Parcel} \cdot \text{Year}} = a + b(1/\text{Distance to BART})$								
Period	b	s_b	t_b	a	s_a	r	N	t(difference)
Pre-BART	6.26	4.40	1.42	.04	.01	.58	6	Pre-Construction/Construction: 1.09
Construction	-8.93	30.96	-.29	.13	.04	-.14	6	Construction/Post-Construction: -.76
Post-BART	4.27	23.70	.18	.13	.03	.09	6	Pre-Construction/Post-Construction: .18

a and b are regression coefficients

s_a and s_b are the corresponding standard errors of the coefficients

t_b is the t-statistic for $H_0: b = 0$ with $N - 2$ degrees of freedom

r is the simple correlation coefficient between the dependent and the independent variable

t(difference) is the t-statistic for the difference between the regression coefficients b for the indicated periods:

$$t = \frac{b_1 - b_2}{\sqrt{\frac{2(s_{b1}^2 + s_{b2}^2)}{2N - 2}}} \text{ with } 2N - 2 \text{ degrees of freedom}$$

Richmond

TABLE A.13. NUMBER OF HOMEOWNER EXEMPTION CLAIMS

Year		DISTANCE FROM BART STATION					
		<300'	300'- 499'	500'- 749'	750'- 999'	1000'- 1499'	1500'- ≤2000'
1969-70:	#	0	21	44	47	74	6
1970-71:	#	0	18	42	44	74	5
	% Δ		-14	- 5	- 6	0	-17
1971-72:	#	0	17	33	43	68	5
	% Δ		- 6	-21	- 2	- 8	0
1972-73:	#	0	17	34	36	78	4
	% Δ		0	3	-16	15	-20
1973-74:	#	0	14	37	40	77	4
	% Δ		-18	9	11	- 1	0
1974-75:	#	0	12	34	39	79	3
	% Δ		-14	- 8	- 3	3	-25
1975-76:	#	0	14	32	43	84	3
	% Δ		13	- 6	10	6	0
1976-77:	#	0	11	29	38	90	4
	% Δ		-21	- 9	-12	7	33
1977-78:	#	0	11	35	40	92	5
	% Δ		0	21	5	2	25

$$\begin{array}{l} \text{Net \% } \Delta \\ 1973 \dots 1978 \end{array} = \begin{array}{l} .35 \\ (.06) \end{array} - \begin{array}{l} 238.73(1/\text{Distance to BART}) \\ (37.99) \end{array}$$

$$r = -.96 \quad N = 5 \quad t_b = -6.28^*$$

Richmond

Since BART service began in 1973, the number of residents near the BART station who claim the homeowner exemption has declined, while farther away the number has risen. Together with the increase in sales activity, this seems to indicate that former homeowners near BART have begun to sell their residences for rental use by absentee owners. This interpretation is further supported by the observation that the vacancy rates in the census tracts near the station have increased from .9 to 5.9 in 1970 to 1.4 to 8.9 in 1975 (special census data). The possibility exists that these activities are not speculative, or that they are more related to the concurrent redevelopment activity in Richmond. However, given the information provided by the informants, the conclusion that the speculation has been BART induced is more probable.

The requests for zoning variances, presented in Table A.14, show no particular relationship to the station, but vary both in time and space.

TABLE A.14. REQUESTS FOR ZONING VARIANCE

<u>Distance From BART Station</u>	<u>No. of Requests</u>	<u>Requests Per 1000 Sq. Ft.</u>	<u>Year of Request</u>	<u>Number of Re- quests Per Year</u>	
				<u>Average</u>	<u>Standard Deviation</u>
<500'	1	1.27	1960 to 1967	1.63	2.07
500'... 999'	1	.42	1968 to 1972	.40	.55
1000'...1499'	7	1.78	1973 to 1977	.00	.00
1500'...2000'	5	.91	t-statistic for difference between construction and nonconstruction =		
>2000'	1				.32

The land-use changes presented in Table A.15, although numerous in the station area, are overwhelmingly the result of redevelopment efforts near the station. No further analysis of the data is therefore done.

None of the informants knew of any real estate transaction in the area where the price paid was out of proportion to the income of the property at the time of the sale.

Richmond has a large minority population. One of the five census tracts near the BART station is predominantly Black, and Latinos constitute approximately ten percent of three of the remaining tracts. The small number of observations, however, do not permit a breakdown of the analysis by census tract. Only one

**TABLE A.15. NUMBER OF PARCELS WITH CHANGED
LAND USE BETWEEN 1965 AND 1977**

<u>Distance From BART Station</u>	<u>Number of Changes</u>	<u>Changes Per Million Sq. Ft.</u>
<500'	7	11.884
500'... 999'	100 ^a	42.4
1000'...1499'	115 ^a	29.3
1500'...2000'	75 ^a	13.6

^a Approximate

informant mentioned that minority members have been either involved or adversely affected by speculation. That informant thought increases in rents near BART had slowed the growth of Black-owned businesses in the area. But then again, this informant was the only one who thought that rents or prices near the station had increased at all. Another informant stated that minority professionals and businessmen have invested in the area east of the BART station, although he thought that this area "receives no benefits" from its location vis-a-vis the station. There was also mention of increasing numbers of Orientals in business in the area, but most of them are newcomers to the country and are not thought to be speculators.

Station Area: 19th Street, Oakland

Station Synthesis: Speculation, in the forms of both land holding and acquiring commercial property, took place around both downtown Oakland BART stations. It began when the decision to build BART was finalized, but peaked within a year of completion of the stations. The speculative activity took place within one-quarter to half a mile of the stations. Apparently there has been no speculation in residential property in the area. There are no indications of involvement by minorities in BART-related speculation; the current activity in the nearby Chinatown is reportedly unrelated to external factors such as BART.

Although BART can be viewed as an integral part of the Oakland redevelopment effort, at least some of the speculation in downtown Oakland can be specifically

19th Street, Oakland

related to BART. However, the speculation, BART-related or not, was never extensive.

Station Analysis: All but one of the seven key informants knew of some speculation in the downtown area. Several of the informants were able to mention specific transactions which they thought had been speculative in character and directly induced by BART. However, no more than four different properties were mentioned.⁴ Some of the non-specified landholding might have been involuntary or otherwise unrelated to BART; one informant stated that "during the pre-BART period Oakland land holders could not find bidders to purchase their holdings at a profit." Another informant believed that "land holding was prevalent before BART and its existence will continue despite BART's future." Three of the informants felt that the speculative ventures had not been profitable, at least not yet.

The geographical extent of the speculation related to BART was not believed to extend beyond one-quarter to half a mile from the stations. In no instance did a key informant mention that speculation had extended into residential areas; in fact, many informants explicitly stated that there had been no speculation in housing. Timewise, the informants felt that the BART-related speculation occurred mainly around the time of the construction of the stations, but that some speculation had occurred earlier.

Data in Table A.16 and the statistics in Table A.17 indicate there were more sales during the pre-construction period further away from the 19th Street station than near it. Later, the activity became much more evenly spread over the study area.

When account is taken of a large condominium development in the outermost zone, the data in Table A.18 seem to suggest that there has been a slight percentage increase in homeownership further away from the station. But the relationship is not statistically significant, and in any case, the increase in absolute numbers is very small.

While there have been a number of land-use changes in the area, there are not significantly more nearer the station, as can be seen from Table A.19. Most of the changes are probably more directly related to the Oakland City Center Project and other redevelopment efforts than to BART. One informant noted that speculation never reached such proportions that it would have made any noticeable impact on BART station areas (in the East Bay) in terms of intermittent land use or vacant lots.

During the period from 1965 to 1977, there were no requests for major zoning variances in the area.

4. 1330 Broadway; 1970 Broadway (World Savings); 1221 Broadway (Clorox Building); 361 13th Street.

TABLE A.16. REAL ESTATE SALES

<u>Distance From BART Station</u>	<u>Sample Size</u>	<u>Pre-BART</u>		<u>BART Construction</u>		<u>Post-BART</u>	
		<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>	<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>	<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>
<300'	5	1	.031	2	.076	2	.066
300'... 499'	6	1	.026	1	.032	3	.082
500'... 749'	6	2	.052	2	.063	2	.055
750'... 999'	10	6	.094	2	.038	1	.016
1000'...1499'	18	11	.095	8	.085	7	.064
1500'...1999'	24	20	.130	9	.071	15	.103

TABLE A.17. ANALYSIS OF COEFFICIENTS AND STATISTICS FOR REAL ESTATE SALES EQUATION

$\frac{\text{Number of Sales}}{\text{Parcel} \cdot \text{Year}} = a + b(1/\text{Distance to BART})$								
Period	b	s_b	t_b	a	s_a	r	N	t(difference)
Pre-BART	-12.81	6.40	-2.00	.10	.02	-.71	6	Pre-Construction: -3.97*
Construction	1.21	4.63	.26	.06	.01	.13	6	Construction/Post-Construction: .34
Post-BART	.13	5.26	.02	.06	.02	.01	6	Pre-Construction/Post-Construction: -3.49*

a and b are regression coefficients

s_a and s_b are the corresponding standard errors of the coefficients

t_b is the t-statistic for $H_0: b = 0$ with $N - 2$ degrees of freedom

r is the simple correlation coefficient between the dependent and the dependent variable

t(difference) is the t-statistic for the difference between the regression coefficients b for the indicated periods:

$$t = \frac{b_1 - b_2}{\sqrt{\frac{2(s_{b1}^2 + s_{b2}^2)}{2N - 2}}} \text{ with } 2N - 2 \text{ degrees of freedom}$$

TABLE A.18. NUMBER OF HOMEOWNER
EXEMPTION CLAIMS^a

Year	DISTANCE FROM BART STATION			
	<1000'	1000'- 1499'	1500'- 2000'	>2000'- 3000'
1969-70: #	3	13	11	2
1970-71: #	1	11	11	2
% Δ	-67	-15	0	0
1971-72: #	1	12	6	2
% Δ	0	9	-45	0
1972-73: #	0	10	9	2
% Δ	-100	-17	50	0
1973-74: #	4	14	12	10
% Δ	...	40	33	400
1974-75: #	3	15	13	19
% Δ	-25	7	8	90
1975-76: #	4	16	16	26
% Δ	67	7	23	37
1976-77: #	6	16	14	39
% Δ	50	0	-13	27
1977-78: #	6	15	15	48
% Δ	0	- 6	7	23

$$\begin{array}{l} \text{Net \% } \Delta \\ 1973 \dots 1978 \end{array} = \begin{array}{l} .07 \\ (.12) \end{array} + \begin{array}{l} 201.79(1/\text{Distance to BART}) \\ (102.21) \end{array}$$

$$r = -.81 \quad N = 4 \quad t_b = 1.97$$

^aExcluding a large condominium development in the
>2000' zone

TABLE A.19. NUMBER OF PARCELS WITH CHANGED
LAND USE BETWEEN 1965 AND 1967

Distance From BART Station	Number of Changes	Changes Per Million Sq. Ft.
<500'	19	24.2
500'... 999'	28	11.9
1000'...1499'	74 ^a	18.8
1500'...2000' ^b	50 ^a	18.2
>2000'	8	

$$\frac{\text{Changes}}{\text{Million Sq. Ft.}} = \frac{14.80}{(3.69)} + \frac{2075.33(1/\text{Distance to BART})}{(1706.18)}$$

$$\begin{aligned} N &= 4 \\ t_b &= 1.22 \\ r &= .65 \end{aligned}$$

^a Approximate

^b Covers one-half of area at that distance from
BART

Two key informants mentioned a total of three property transactions where the price paid was considerably higher than might have been expected solely on the basis of the income of the property in the short run. The following specifics on one transaction were obtained.

In December, 1966, World Savings (under a different name then) bought 20,100 square feet of property at Broadway and 20th for \$950,000. Demolishing the existing buildings on the property cost \$150,000, so the total land cost amounted to \$54.73 per square foot. This was the highest price for land that had ever been paid in Oakland. Ordinarily the land would have sold for around \$40.00 per square foot. Five years later, the Bank of America bought the northeast corner of the same intersection for \$41.00 per square foot.

Station Area: Fruitvale, Oakland

Station Synthesis: There is no evidence of speculation, BART-related or otherwise, in the area. Although there are now more real estate sales near the BART station than before, informants did not feel this was indicative of emerging speculation. The numerous land-use changes in the vicinity of the station are primarily caused by a large public housing project, freeway construction, and the construction of the BART station and tracks.

Station Analysis: None of the informants specifically interviewed about this station area felt that there has been any speculation going on in the area. Another informant, when queried about station areas in general, stated that "it's hard to say about Fruitvale. The speculators were probably scared of the area because of the large minority element there." The lack of demand for space and the uncertainty of future land use in the area, noted by other key informants, combine to create a situation too risky for most economic ventures, including speculation.

An analysis of the real estate sales in the area, shown in Table A.20, indicates that there has been a significant departure from the pre-construction period situation, where sales tended to be proportionally more frequent further away from the station. In the post-construction period, the sales activity has become oriented towards the station area. However, the distance relationships are, by themselves, not statistically different; only the difference between them, that is, the shift, is significant. This is also supported by one informant's observation that although sales have increased in the area, "this type of physical movement can be and is present in all neighborhoods where a large part of the population is either working class or young or a combination of the two, or mobile elderly persons." That is, the highly mobile population, rather than speculation, is the probable cause of the greater sales activity.

The change in the number of homeowner exemptions shown in Table A.22 above does not vary with distance to the BART station. The situation here contrasts with that of Richmond, another station area which has considerable minority populations, where an increase in absentee ownership seems related to the BART station.

Between 1970 and 1976, the period for which data was readily available in Oakland, there were no requests for major zoning variances in the vicinity of the station. There were a number of land-use changes which, as the analysis in Table A.23 shows, have occurred more frequently closer to the BART station. However, between 1960 and 1966 these changes are more likely related to the large public projects in the area than to speculation. For example, there were 1,700 new housing units constructed and 1,200 old ones demolished in connection with a public housing project near the station. Some of the land-use changes in the early period might have been caused by construction on the Nimitz freeway. Finally, the construction of the BART station and its parking areas certainly constituted some of the nearby land-use changes.

TABLE A.20. REAL ESTATE SALES

<u>BART Station</u>	<u>Sample Size</u>	<u>Pre-BART</u>		<u>BART Construction</u>		<u>Post-BART</u>	
		<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>	<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>	<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>
<300'	4	1	.021	0	.000	5	.124
300'... 499'	1						
500'... 749'	2						
750'... 999'	7	0	.000	3	.080	2	.050
1000'...1499'	10	4	.059	3	.056	3	.052
1500'...1999'	12	8	.099	3	.047	6	.087
2000'...2500'	11	5	.067	0	.000	6	.095

TABLE A.21. ANALYSIS OF COEFFICIENTS AND STATISTICS FOR REAL ESTATE SALES EQUATION

$\frac{\text{Number of Sales}}{\text{Parcel} \cdot \text{Year}} = a + b(1/\text{Distance to BART})$								
Period	b	s_b	t_b	a	s_a	r	N	t(difference)
Pre-BART	-26.82	19.66	-1.36	.08	.03	-.62	5	Pre-Construction: - .94
Construction	-13.16	21.44	-.61	.05	.03	-.33	5	Construction/Post-Construction: -2.38
Post-BART	19.16	16.60	1.15	.06	.02	.55	5	Pre-Construction/Post-Construction: -3.57

a and b are regression coefficients

s_a and s_b are the corresponding standard errors of the coefficients

t_b is the t-statistic for $H_0: b = 0$ with $N-2$ degrees of freedom

r is the simple correlation coefficient between the dependent and the independent variable

t(difference) is the t-statistic for the difference between the regression coefficients b for the indicated periods:

$$t = \frac{b_1 - b_2}{\sqrt{\frac{2(s_{b1}^2 + s_{b2}^2)}{2N - 2}}} \text{ with } 2N - 2 \text{ degrees of freedom}$$

TABLE A.20. REAL ESTATE SALES

BART Station	Sample Size	Pre-BART		BART Construction		Post-BART	
		No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year
<300'	4	1	.021	0	.000	5	.124
300'... 499'	1						
500'... 749'	2						
750'... 999'	7	0	.000	3	.080	2	.050
1000'...1499'	10	4	.059	3	.056	3	.052
1500'...1999'	12	8	.099	3	.047	6	.087
2000'...2500'	11	5	.067	0	.000	6	.095

TABLE A.21. ANALYSIS OF COEFFICIENTS AND STATISTICS FOR REAL ESTATE SALES EQUATION

$\frac{\text{Number of Sales}}{\text{Parcel} \cdot \text{Year}} = a + b(1/\text{Distance to BART})$								
Period	b	s_b	t_b	a	s_a	r	N	t(difference)
Pre-BART	-26.82	19.66	-1.36	.08	.03	-.62	5	Pre-Construction: - .94
Construction	-13.16	21.44	-.61	.05	.03	-.33	5	Construction/Post-Construction: -2.38
Post-BART	19.16	16.60	1.15	.06	.02	.55	5	Pre-Construction/Post-Construction: -3.57

a and b are regression coefficients

s_a and s_b are the corresponding standard errors of the coefficients

t_b is the t-statistic for $H_0: b = 0$ with $N-2$ degrees of freedom

r is the simple correlation coefficient between the dependent and the independent variable

t(difference) is the t-statistic for the difference between the regression coefficients b for the indicated periods:

$$t = \frac{b_1 - b_2}{\sqrt{\frac{2(s_{b1}^2 + s_{b2}^2)}{2N - 2}}} \text{ with } 2N - 2 \text{ degrees of freedom}$$

Fruitvale, Oakland

TABLE A.22. NUMBER OF HOMEOWNER EXEMPTION CLAIMS

Year	DISTANCE FROM BART STATION					
	<300'	300'- 499'	500'- 749'	750'- 999'	1000'- 1499'	1500'- <2000'
1969-70: #	10	11	5	11	47	14
1970-71: #	11	8	5	13	49	19
% Δ	10	-27	0	18	4	36
1971-72: #	8	6	5	16	49	16
% Δ	-27	-27	0	23	0	-16
1972-73: #	9	7	5	12	45	16
% Δ	13	17	0	-25	- 8	0
1973-74: #	11	7	5	14	50	17
% Δ	22	0	0	17	11	6
1974-75: #	12	6	5	15	50	18
% Δ	9	-14	0	7	0	6
1975-76: #	12	7	5	17	52	18
% Δ	0	17	0	13	4	0
1976-77: #	13	7	5	16	52	15
% Δ	8	0	2	- 6	0	-17
1977-78: #	11	6	4	13	52	16
% Δ	-15	-14	-20	-19	0	7

$$\begin{aligned} \text{Net \% } \Delta &= -.09 + 7.59(1/\text{Distance to BART}) \\ 1973\dots 1978 &= (.06) \quad (19.02) \end{aligned}$$

$$r = .20 \qquad N = 6 \qquad t_b = .40$$

Fruitvale, Oakland

TABLE A.23. NUMBER OF PARCELS WITH CHANGED
LAND USE BETWEEN 1965 AND 1977

<u>Distance From BART Station</u>	<u>Number of Changes</u>	<u>Changes Per Million Sq. Ft.</u>
<500'	16	34.0
500'... 999'	29	15.4
1000'...1499'	18	4.6
1500'...2000'	38	6.9
>2000'	3	

$$\frac{\text{Changes}}{\text{Million Sq.Ft.}} = \frac{1.369}{(2.576)} + \frac{8255.8(1/\text{Distance to BART})}{(1190)}$$

$$N = 4$$

$$t_b = 6.938^*$$

$$r = .98$$

None of the key informants were aware of any real estate transactions in the area where the price paid would have seemed out of proportion to the income of the property at the time of the sale.

Neither had any of the informants noted that property was tending to transfer from minority to white ownership or vice versa, nor that there were any noticeable ethnic differences in other uses of land.

Station Area: Fremont

Station Synthesis: There has been no BART-related speculation in Fremont. The development around the station area has been controlled by the City of Fremont through its General Plan. The large pieces of vacant land in the vicinity of the station are not held by speculators but are, with the exception of one, either on the market — with no takers — or tied up in litigation. Recently one developer has exercised a two year option on one of the vacant lots and is now proceeding with plans to develop the land in accordance with General Plan provisions.

Fremont

Speculation in apartments and other higher density housing may have been prevented by the weak demand for such housing in Fremont, the existing generous supply, and the relative expense of its construction.

There are no major concentrations of minorities near the BART station.

Station Analysis: Five out of the six persons interviewed about the area said categorically that there had been no speculation in Fremont which could be attributed to BART. The sixth informant thought that there might have been some speculative activity around the time the station was built, but that it certainly had died out long ago. The present inactivity on large pieces of vacant land adjoining the station, according to several of the informants, is due to a lack of demand for the land. The City of Fremont requires densities of 50 to 70 dwelling units per acre within walking distance (one-half of a mile) of the station. This not only makes construction relatively expensive,⁵ but also does not respond to the present demand in Fremont for traditional single-family housing. In addition, profits for a developer from rental housing do not appear attractive: the existing supply already seems adequate and the renters in the area are very mobile, readily responding to even small competitive cuts in monthly rentals.

An eight-acre site next to the station has been on the market now for four or five years and, although there have been several inquiries, no one has offered to buy it. It is believed that there is not a fixed asking price for the land, so it appears that the difficulty to sell cannot be attributed to overpricing.

Another piece of property near the station is under litigation and cannot be sold.

One developer has recently bought a site approximately 1,000 feet northeast of the station for the very low price of \$32,000 per acre, after having had a two-year option. The site will be developed at the minimum density of 50 dwelling units per acre required by the City, but the parking requirements have been relaxed somewhat. The developer expects that the proximity to BART will only be able to offset the cost and profit disadvantages of the high densities. According to the definition adopted here, the project cannot be classified as speculation.

One informant felt that much of the landholding that has occurred in the area was due to the fact that the owners were Portuguese who, for reasons of tradition, do not like to sell their land. This, however, was not collaborated by an Alameda County Assessor's Office representative who said that there had been numerous sales involving Portuguese owners. This representative also had noticed an increase in purchases of large pieces of land by individuals in many parts

5. Earthquake hazards in the area and underground parking required by the density make the cost of multi-story structures relatively expensive compared to conventional single family housing.

TABLE A.24. REAL ESTATE SALES

Distance From BART Station	Sample Size	Pre-BART		BART Construction		Post-BART	
		No. Of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year
<1000'	2			0	.000	2	.075
1000'...1499'	3						
1500'...1999'	10			2	.089	3	.038
2000'...2499'	13			0	.000	8	.115
2500'...2999'	9			1	.049	4	.083
3000'...3499'	6			3	.222	2	.063
3500'...3999'	6			1	.074	5	.156
>4000'	8			0	.000	8	.188

Fremont

Speculation in apartments and other higher density housing may have been prevented by the weak demand for such housing in Fremont, the existing generous supply, and the relative expense of its construction.

There are no major concentrations of minorities near the BART station.

Station Analysis: Five out of the six persons interviewed about the area said categorically that there had been no speculation in Fremont which could be attributed to BART. The sixth informant thought that there might have been some speculative activity around the time the station was built, but that it certainly had died out long ago. The present inactivity on large pieces of vacant land adjoining the station, according to several of the informants, is due to a lack of demand for the land. The City of Fremont requires densities of 50 to 70 dwelling units per acre within walking distance (one-half of a mile) of the station. This not only makes construction relatively expensive,⁵ but also does not respond to the present demand in Fremont for traditional single-family housing. In addition, profits for a developer from rental housing do not appear attractive: the existing supply already seems adequate and the renters in the area are very mobile, readily responding to even small competitive cuts in monthly rentals.

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Another piece of property near the station is under litigation and cannot be sold.

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One informant felt that much of the landholding that has occurred in the area was due to the fact that the owners were Portuguese who, for reasons of tradition, do not like to sell their land. This, however, was not corroborated by an Alameda County Assessor's Office representative who said that there had been numerous sales involving Portuguese owners. This representative also had noticed an increase in purchases of large pieces of land by individuals in many parts

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TABLE A.24. REAL ESTATE SALES

Distance From BART Station	Sample Size	Pre-BART		BART Construction		Post-BART	
		No. Of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year	No. of Sales	Sales/Par- cel/Year
<1000'	2			0	.000	2	.075
1000'...1499'	3						
1500'...1999'	10			2	.089	3	.038
2000'...2499'	13			0	.000	8	.115
2500'...2999'	9			1	.049	4	.083
3000'...3499'	6			3	.222	2	.063
3500'...3999'	6			1	.074	5	.156
>4000'	8			0	.000	8	.188

Fremont

of the County but did not think this had anything to do with BART nor with speculation, but attributed it to an increasing number of buyers desiring privacy.

One informant knew of speculative landholding further away from the BART station, in the central areas of Fremont, where some banks had bought land twelve years ago. Currently they are holding on "for a price." He did not think this was induced by BART.

Due to difficulties in obtaining access to property transfer records in Alameda County, sales data for the pre-construction period were not studied. However, given the insignificant relationships between the frequency of sales and distance to the BART station for both the construction and the post-construction periods, exhibited in the analysis of Table A.25, and given the opinions of the key informants, no great loss of relevant information is probably incurred by the omission.

The analysis of changes in the number of homeowner exemptions in Table A.26 does not reveal any systematic variation with distance to the BART station; in some of the areas, new construction accounts for the increase in homeownership.

More requests for zoning variances have occurred further from the station than near it, but the difference is not statistically significant (see Table A.27). The number of actual land-use changes, however, increases significantly with greater distance from the station as shown in Table A.28. This indicates the BART station's lack of influence on the land-use changes in Fremont.

None of the six key informants knew of any real estate transactions in the area where the price paid was considerably higher than might have been expected solely on the basis of the income of the property in the short run.

No areas near the Fremont station are dominated by minorities.

TABLE A.25. ANALYSIS OF COEFFICIENTS AND STATISTICS FOR REAL ESTATE SALES EQUATION

$\frac{\text{Number of Sales}}{\text{Parcel} \cdot \text{Year}} = a + b(1/\text{Distance to BART})$								
Period	b	s _b	t _b	a	s _a	r	N	t(difference)
Pre-BART	Pre-Construction: ..
Construction	-69.88	87.60	-.80	.10	.05	-.34	7	Construction/Post-Construction: -.23
Post-BART	-60.14	56.31	-1.07	.13	.03	-.43	7	Pre-Construction/Post-Construction: ..

a and b are regression coefficients

s_a and s_b are the corresponding standard errors of the coefficients

t_b is the t-statistic for H₀: b = 0 with N-2 degrees of freedom

r is the simple correlation coefficient between the dependent and the independent variable

t(difference) is the t-statistic for the difference between the regression coefficients b for the indicated periods:

$$t = \frac{b_1 - b_2}{\sqrt{\frac{2(s_{b1}^2 + s_{b2}^2)}{2N - 2}}} \text{ with } 2N - 2 \text{ degrees of freedom}$$

Fremont

TABLE A.26. NUMBER OF HOMEOWNER EXEMPTION CLAIMS

Year	DISTANCE FROM BART STATION					
	<1000'	1000'- 1499'	1500'- 1999'	2000'- 2499'	2500'- 2999'	≥3000'
1969-70: #	8	12	32	57	51	31
1970-71: #	8	12	27	56	54	35
% Δ	0	0	-16	- 2	6	13
1971-72: #	8	10	29	55	55	36
% Δ	0	-17	7	- 2	2	3
1972-73: #	5	16	33	58	57	33
% Δ	-38	60	14	5	4	- 8
1973-74: #	6	17	31	58	54	37
% Δ	20	6	- 6	0	- 5	12
1974-75: #	5	17	32	54	60	36
% Δ	-17	0	3	- 7	11	- 3
1975-76: #	7	17	35	58	59	39
% Δ	40	0	9	7	- 2	8
1976-77: #	7	15	31	60	110	40
% Δ	0	-12	-11	3	86	3
1977-78: #	7	17	31	79	125	38
% Δ	0	13	0	32	14	- 5

$$\begin{aligned} \text{Net } \% \Delta &= .47 - 205.52(1/\text{Distance to BART}) \\ 1973\dots 1978 &= (.36) \quad (387.00) \end{aligned}$$

$$r = -.26 \quad N = 6 \quad t_b = -.53$$

Fremont

TABLE A.27. REQUESTS FOR ZONING VARIANCE

<u>Distance From BART Station</u>	<u>No. of Requests</u>	<u>Requests Per 1000 Sq. Ft.</u>	<u>Year of Request</u>	<u>Number of Re- quests Per Year</u>	
				<u>Average</u>	<u>Standard Deviation</u>
<500'	0	0	1960 to 1969	1.60	1.78
500'... 999'	2	.85	1970 to 1971	1.50	.71
1000'...1499'	5	1.27	1972 to 1977	.83	.75
1500'...1999'	11	2.00	t-statistic for difference between construction and nonconstruction =		
2000'...2500'	7	1.01			.50

TABLE A.28. NUMBER OF PARCELS WITH CHANGED
LAND USE BETWEEN 1965 AND 1977

<u>Distance From BART Station</u>	<u>Number of Changes</u>	<u>Changes Per Million Sq. Ft.</u>
<500'	0	0
500'... 999'	4	1.7
1000'...1499'	6	1.5
1500'...2000'	10	1.8
>2000'	3	

$$\frac{\text{Changes}}{\text{Million Sq.Ft.}} = \frac{2.12}{(.19)} - \frac{517.69(1/\text{Distance to BART})}{(88.81)}$$

$$N = 4$$

$$t_b = 5.83^*$$

$$r = -.97$$

Station Area: Rockridge, Oakland

Station Synthesis: There has been some speculation in small commercial and residential properties in the area. The speculation can be partially attributed to BART, but other factors have also increased the attractiveness of the area. The speculation was never extensive and did not reach beyond 500 feet of the station area, or into areas dominated by minorities. Some speculation almost certainly was prevented by the actual downzoning of the area in 1974 in response to pressure from neighborhood groups. The predominantly small lots and very fractured ownership patterns likewise prevented large speculative developments to occur.⁶

Station Analysis: All of the four informants interviewed about this station area thought that there had been some speculation, especially on or near College Avenue, which bisects the area. The BART-related activity was not thought to have extended beyond 500 feet of the station area, although one informant mentioned a radius of one mile. Given other information, however, this latter figure appears much too high. All informants agreed that the speculation had occurred around the time the station was built (within one year of start or completion of construction) and that it had disappeared soon thereafter when the high expectations with respect to BART began to fade.

The speculation was in both residential units and small commercial properties. However, some of this activity must be attributed to other factors which, concurrently with BART, made the area attractive. Among those mentioned were the construction of the Grove-Shafter Freeway, the University of California—Berkeley campus (within one mile of the area), good AC Transit access, a nearby high-income residential area which, along with the student population, made the area very suitable for boutique-type businesses, antique stores, etc. The construction of BART also happened at a time when it started to be "socially acceptable" to move out from San Francisco to areas like Rockridge, when gasoline prices and other constraints on commuting by private car began to be felt, and when the demand for residential property in the area began to strengthen, and the supply began to increase (due to the aging population of the original owners). Finally, the College Avenue area lent itself very well to the regionwide increase in demand for commercial space for small, boutique-type commercial ventures. The height of the activity appears to have occurred within one year of the completion of the BART station, and according to all of the key informants, has "died off along with the expectations on BART."

There have not been significantly more real estate sales near the BART station, as can be seen from the analysis of Table A.30. However, in 1973-74, when service began on the Richmond-Berkeley line and the Trans-Bay tube opened, home-ownership clearly declined near the station area, whereas it registered an in-

6. Administration & Management Research Associates of New York City, Inc., Transit Station Area Joint Development Strategies for Implementation — Economic Case Studies, Vol. II, prepared for Urban Mass Transit Administration, Washington, D.C. (February 1976), p. 133.

TABLE A.29. REAL ESTATE SALES

<u>Distance From BART Station</u>	<u>Sample Size</u>	<u>Pre-BART</u>		<u>BART Construction</u>		<u>Post-BART</u>	
		<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>	<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>	<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>
300'... 749'	7	3	.060	3	.082	1	.027
750'... 999'	6	4	.093	1	.032	3	.094
1000'...1499'	16	13	.113	7	.083	6	.070
1500'...1999'	20	10	.070	10	.095	9	.084
2000'...2500'	4	4	.140	2	.095	0	.000

TABLE A.30. ANALYSIS OF COEFFICIENTS AND STATISTICS FOR REAL ESTATE SALES EQUATION

$\frac{\text{Number of Sales}}{\text{Parcel} \cdot \text{Year}} = a + b(1/\text{Distance to BART})$								
Period	b	s_b	t_b	a	s_a	r	N	t(Difference)
Pre-BART	-36.42	24.13	-1.51	.13	.03	-.66	5	Pre-Construction: -1.24
Construction	-15.18	24.28	-.63	.09	.03	-.34	5	Construction/Post-Construction: -.51
Post-BART	-3.39	39.43	-.09	.06	.04	-.05	5	Pre-Construction/Post-Construction -1.43

a and b are regression coefficients

s_a and s_b are the corresponding standard errors of the coefficients

t_b is the t-statistic for $H_0: b = 0$ with $N-2$ degrees of freedom

r is the simple correlation coefficient between the dependent and the independent variable

t(difference) is the t-statistic for the difference between the regression coefficients b for the indicated periods:

$$t = \frac{b_1 - b_2}{\sqrt{\frac{2(s_{b1}^2 + s_{b2}^2)}{2N - 2}}} \quad \text{with } 2N - 2 \text{ degrees of freedom}$$

Rockridge, Oakland

crease further away (see Table A.31). Coupled with the lack of evidence of more sales near the station and the informants' assertion that there was speculation in residential properties, this seems to indicate that there was a tendency for the current owners to retain their ownership, but move away themselves (perhaps because of the addition of a new major source of noise, the Grove-Shafter Freeway) and put their houses up for rent. To the extent that these owners were only renting their properties while waiting for the prices to go up still further, this constitutes speculation as defined here.

TABLE A.31. NUMBER OF HOMEOWNER EXEMPTION CLAIMS

Year	DISTANCE FROM BART STATION				
	<300'	300'- 499'	500'- 999'	1000'- 1499'	1500'- 2000'
1969-70: #	7	85	208	53	67
1970-71: #	7	82	208	50	64
% Δ	0	- 4	0	- 6	- 4
1971-72: #	7	77	197	50	63
% Δ	0	- 6	- 5	0	- 2
1972-73: #	7	77	207	45	63
% Δ	0	0	5	-10	0
1973-74: #	5	76	216	47	72
% Δ	-29	-10	- 4	4	14
1974-75: #	6	76	213	50	75
% Δ	20	0	- 1	6	4
1975-76: #	6	85	223	56	82
% Δ	0	12	5	12	9
1976-77: #	6	82	223	54	79
% Δ	0	- 4	0	- 4	- 4
1977-78: #	3	85	217	56	77
% Δ	-50	4	- 3	4	- 3

$$\text{Net \% } \Delta = \frac{4.24}{1.38} - \frac{1782.77(1/\text{Distance to BART})}{(420.82)}$$

$$r = -.93$$

$$N = 5$$

$$t_b = -4.24^*$$

Rockridge, Oakland

There have been more requests for zoning variances further away from the BART station (see Table A.32), but there were more actual land-use changes in the vicinity of the station (see Table A.33). The latter relationship is statistically significant but the absolute numbers are small.

TABLE A.32. REQUESTS FOR ZONING VARIANCE—ON COLLEGE AVENUE^a

Distance From BART Station	No. of Requests	Year of Request	Number of Re- quests Per Year	
			Average	Standard Deviation
<500'	0	1965 to 1966	1.50	.71
500'... 999'	1	1967 to 1971	.20	.45
1000'...1499'	1	1972 to 1977	.67	.82
1500'...1999'	4	t-statistic for difference between construction and nonconstruction =		
2000'...2499'	1			.74
2500'...3000'	1			

^aOnly one major variance within one third mile of station 1970 to 1976 (not on College Avenue)

All but one of the informants thought that there had been some real estate transactions where the price paid seemed higher than might have been expected solely on the basis of the income of the property in the short run. The dissident informant said that the speculators were "not so eager that they would have paid a premium; rather, they kept looking till they found the right price." No specific transactions were mentioned.

One informant mentioned that there had been more use intensifications or land use changes among white property buyers.

Rockridge, Oakland

TABLE A.33. NUMBER OF PARCELS WITH CHANGED
LAND USE BETWEEN 1965 AND 1977

<u>Distance From BART Station</u>	<u>Number of Changes</u>	<u>Changes Per Million Sq. Ft.</u>
<500'	3	5.73
500'... 999'	7	2.97
1000'...1499'	2	.51
1500'...2000'	6	1.09
>2000'	2	

$$\frac{\text{Changes}}{\text{Million Sq. Ft.}} = \frac{.198}{(.680)} + \frac{1418.4(1/\text{Distance to BART})}{(313.9)}$$

$$\begin{aligned} N &= 4 \\ t_b &= 4.518* \\ r^2 &= .95 \end{aligned}$$

Station Area: Walnut Creek

Station Synthesis: There is some activity in the area which can be defined as speculation. It began at about the same time as construction of the BART station, and peaked within one year after BART service began. The BART-related speculative activity does not extend beyond 1,000 feet of the station.

There are no areas near the station dominated by minorities.

Station Analysis: Three of the four key informants interviewed about this area said there was speculation in the area, and were able to name specific transactions. Informants for other areas also thought there was speculation in the Walnut Creek station area; in particular, the Walnut Creek Plaza Building right next

Walnut Creek

to the station was often mentioned.⁷ One informant specifically disagreed with the assessment that there was speculation in the area; he defined it as "normal real estate development activity." Real speculation, according to this informant, had been prevented by the "no-growth syndrome."

Two of the informants knew of a particular realtor who had been buying property just north of the station with the apparent objective of assembling land for resale without further developing it. The land is commercially zoned, but a comprehensive plan for the entire area is required before any piece of it can be developed. It can be argued that this is not primarily speculative activity but that this realtor expects to get his profit mainly from having assembled a larger piece of property and not from an increase in the market price of the individual parcels.

The so-called "Golden Triangle" was also mentioned by several informants. In May, 1970, most of the homeowners in the triangular area just north of the station decided to offer their land, 425,000 square feet, for sale jointly. Since then the land has been for sale, but the asking price is so high and the demand for land next to the BART station so low, that the properties are not moving. Despite the agreement there have been a few individual sales, but one of the informants thought that it might be the aforementioned realtor buying into the area in order to prevent the realization of another large contiguous piece of land which might compete with his assembling effort. Another informant thought that although the owners certainly are holding their properties for a price, they are with a few exceptions still living in their houses and the holding therefore does not meet his definition of speculation. It can also be argued that the owners have formed a cartel with the purpose of achieving higher prices for their land through the resulting restriction on supply, rather than through speculation proper.

Two of the informants knew of purchases of property in the station area by two individuals who intended to hold the property for the time being without any further development.

In 1969, a 2.9 acre parcel adjacent to the BART station changed hands four times with the value increasing from \$3.50 per square foot to \$5.32 per square foot. The last purchaser was the Dillingham Corporation which bought the property for high-rise office development. Although the last purchase may not have been primarily speculative, it is likely that the previous three transactions were motivated by expected speculative gains.

No informant thought that the speculation had extended beyond 1,000 feet of the station, and no speculation was reported in the residential area west of the freeway, immediately parallel to the BART station.

7. Office construction in Walnut Creek is specifically subject to study in John Blayney Associates/David M. Dornbusch & Company, Inc., Study of the Office Construction Industry (Berkeley: BART Impact Program Land Use and Urban Development Project, August 1976).

Walnut Creek

Table A.34 shows that there were fewer real estate sales in the entire study area during the construction of the BART station than either before or after the construction. The analysis of Table A.35 shows that there has been a significant shift in the location of the sales activity: whereas in the pre-construction period there were clearly more sales further away, they have tended to cluster more around the station area in the post-construction period, despite the above-reported holding of property in the "Golden Triangle" area.

Table A.36 shows that within one or two years before BART service began on the Concord line, there was a noticeable decline in homeownership within 2,000 feet of the station. Later, however, this trend started to reverse so that the net effect over the study period shows no significant distance relationship to the BART station.

During the past few years there have been no requests for major zoning variances; the area presently has a tentative zoning so each building permit application is decided upon on a case-by-case basis.

The area east of the BART station was formerly dominated by food processing industries. It has now changed dramatically towards commercial/retail uses. In the area immediately south of the station, many single-family houses have been demolished in favor of apartment structures. The many land-use changes, and their close relationship to the BART station, are evident in Table A.37. That this much land-use change has spurred some speculation is to be expected.

Only one of the key informants thought that there had been instances where the price paid for a piece of property was higher than what might be expected on the basis of the rental income from the property. In particular, it was thought that the realtor who is currently trying to assemble land near the station, had paid "above-market" prices for some properties within the "Golden Triangle" in order to break up the cartel.

There are no areas near the station which are dominated by minorities.

TABLE A.34. REAL ESTATE SALES

<u>Distance From BART Station</u>	<u>Sample Size</u>	<u>Pre-BART</u>		<u>BART Construction</u>		<u>Post-BART</u>	
		<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>	<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>	<u>No. of Sales</u>	<u>Sales/Par- cel/Year</u>
300'... 499'	7	2	.035	1	.034	6	.166
500'... 749'	20	10	.061	6	.072	15	.145
750'... 999'	20	8	.048	10	.120	13	.126
1000'...1499'	28	15	.065	7	.060	17	.118
1500'...1999'	22	13	.072	9	.098	14	.123
2000'...2500'	4	2	.061	0	.000	3	.145

TABLE A.35. ANALYSIS OF COEFFICIENTS AND STATISTICS FOR REAL ESTATE SALES EQUATION

Period	Number of Sales				s_a	r	N	t(difference)
	b	s_b	t_b	a				
Pre-BART	-14.16	4.93	-2.87*	.07	.01	-.82	6	Pre-Construction: - .84
Construction	- 3.50	28.00	- .13	.07	.04	-.06	6	Construction/Post-Construction: - 1.61
Post-BART	17.44	7.89	2.21	.12	.01	.74	6	Pre-Construction/Post-Construction: -7.59*

a and b are regression coefficients

s_a and s_b are the corresponding standard errors of the coefficients

t_b is the t-statistic for $H_0: b = 0$ with $N-2$ degrees of freedom

r is the simple correlation coefficient between the dependent variable and the independent variable

t(difference) is the t-statistic for the difference between the regression coefficients b for the indicated periods:

$$t = \frac{b_1 - b_2}{\sqrt{\frac{2(s_{b1}^2 + s_{b2}^2)}{2N - 2}}} \quad \text{with } 2N - 2 \text{ degrees of freedom}$$

Walnut Creek

TABLE A.36. NUMBER OF HOMEOWNER EXEMPTION CLAIMS

Year	DISTANCE FROM BART STATION						
	<300'	300'- 499'	500'- 749'	750'- 999'	1000'- 1499'	1500'- 1999'	2000'- 3000'
1969-70: #		15			60	40	30
1970-71: #		14			62	45	26
% Δ		- 7			3	13	-13
1971-72: #		15			52	35	29
% Δ		7			-16	-22	12
1972-73: #		13			47	34	34
% Δ		-13			-10	- 3	17
1973-74: #		16			50	34	32
% Δ		23			6	0	- 6
1974-75: #		14			50	38	33
% Δ		-13			0	12	3
1975-76: #		15			47	37	31
% Δ		7			- 6	- 3	- 6
1976-77: #		18			51	41	33
% Δ		20			9	11	6
1977-78: #		17			52	42	32
% Δ		- 6			2	2	- 3

Net % Δ = .10 - 25.09(1/Distance to BART)
 1973...1978 = (.15) (179.98)

r = -.10 N = 4 t_b = .14

Walnut Creek

TABLE A.37. NUMBER OF PARCELS WITH CHANGED
LAND USE BETWEEN 1965 AND 1977

<u>Distance From BART Station</u>	<u>Number of Changes</u>	<u>Changes Per Million Sq. Ft.</u>
<500'	3	11.5
500'... 999'	18	10.2
1000'...1499'	25	6.4
1500'...2000'	39	7.1
>2000'	24	

$$\frac{\text{Changes}}{\text{Million Sq. Ft.}} = \frac{5.00}{(1.23)} + \frac{3082.96}{(890.87)} (1/\text{Distance to BART})$$

$$N = 4$$

$$t_b = 3.46^*$$

$$r = .93$$

OTHER STATION AREAS

Station Synthesis: Based upon key informant observations, there seems to have been some speculative activity in the suburban areas along the BART line in eastern and central Contra Costa County but not in equally suburban southern Alameda County. There is also a noticeable difference between the two major central business districts in the BART service area, downtown San Francisco and downtown Oakland; while the former seems to have escaped speculation altogether, the latter is generally thought to have experienced some speculative activity, especially in commercial property. From Oakland, the speculative activity appears to have spread not only along the Concord line but also north along the Richmond line, gradually changing from speculation in primarily office structures in downtown Oakland, to a mix of small commercial and residential speculation in North Oakland and to mainly speculation in residential structures at the North Berkeley station and northward.

Station Analysis: In addition to the above-analyzed station areas, nearly all other station areas were mentioned by at least one key informant as having experienced some speculative activity due to BART. The 12th Street station in downtown Oakland and the suburban stations along the Concord line were most frequently mentioned. In addition, the Pittsburg-Antioch area was mentioned by one informant. Notable exceptions were the San Francisco downtown stations and the Southern Alameda County stations (except for Hayward) which were not mentioned by any of the informants.

On the other hand, two informants explicitly stated that there had been no speculation at all in the entire downtown Oakland area or at the Coliseum station. Representatives for the Alameda County Assessor's Office went so far as to say that the only place in the County where BART had had any noticeable effect on real estate, including speculation, was the Fremont area.

In general the key informants' remarks concerning these other station areas were brief and do not lend themselves to further analysis. In one case, however, the informants' observations were not only particularly well founded⁸ but were both unique and interesting and will therefore be reiterated here: "Berkeley has one of the most integrated housing markets in the Bay Area. This might be due not only to the University and the population it draws but also to the very high prices for housing in Berkeley which then have forced low-income whites to move into the relatively cheaper black neighborhoods; a sort of reverse integration process." (Actually it may only represent a transitional state where the blacks are gradually forced out of their neighborhoods in the Berkeley flatlands but, at least for the time being, integration is happening.) "Now with BART-related speculation having raised land and housing prices around the North Berkeley station, this integration process never got underway—housing there became too

-
8. The informant is a professional in the real estate market and has himself bought a property in the area for speculative reasons related to BART. In addition, the informant lectures in real estate and appears to have given much careful thought to the processes at work in the real estate markets in the East Bay.

Other Station Areas

expensive for the low-income whites to be interested." The areas south and east of the station are populated primarily by blacks whereas the higher-quality housing north of the station has a notable Japanese population. The area west of the station is dominated by middle and upper-middle income whites and was subject to considerable BART-related speculation according to the informant.

APPENDIX B. KEY INFORMANT INTERVIEWS: A SUMMARY¹

This appendix summarizes inquiries among realtors, bankers, developers and city planners regarding speculative and related activities on the real estate markets in areas served by BART. The review illustrates community differences.

RESIDENTIAL AREAS -- SUBURBAN

Walnut Creek

Areawide, property was made more desirable by BART access to downtown San Francisco and Oakland. (Grobe)

Greater importance is attributed to BART by persons living within a nine minute drive of BART than persons living further out, however. (John Blayney Associates/David M. Dornbusch & Company, Inc., Program-Wide Case Studies, Findings to Date, December 1977, p. 49.)

Since BART construction several large apartment complexes have been built. Nevertheless this construction accounted for only a small proportion of new construction in the station area. (John Blayney Associates/David M. Dornbusch & Company, Inc., Station Area Land Use, Working Paper, November 1977, p. 8.)

During the BART Construction period a ten story office building was constructed in the station area. This created so much opposition that a second planned structure was not built when incentives in relation to height and parking requirements were repealed. (John Blayney Associates/David M. Dornbusch & Company, Inc., Program-Wide Case Studies, pp. 49-50.)²

The station is located close to a freeway exit and an older commercial and residential area. Traffic has become so congested in the area that one informant predicts that the value of some properties will be lessened. (Foley)

Property, including some large parcels, is being held near the BART station area but prices are higher than buyers are willing to pay. Even for currently owned residences near the station, prices have been higher than buyers were willing to pay. (Grobe, Foley, deLeau)

One observer believes a "no growth" syndrome has dampened speculative activity. (Grobe)

-
1. The review has been compiled by Human Resources Corporation on the basis of interviews performed by them as well as by David M. Dornbusch & Company, Inc. and John Blayney Associates.
 2. Regardless of opposition and lack of incentives, it is doubtful that a second building would have been built since the first one was not an economic success. (Betts)

Fremont

Within the community of Fremont there has been a continuing and, at times, high sales activity in single family residential properties. (Martin, Shanks) The average annual growth rate, 1960 through 1975, has been 4.7.

When BART was constructed, several apartment complexes were built within two miles of the station. These were slow to fill and have not drawn a stable clientele. Since this experience, there has been little new apartment construction. (Martin, Epstein)

There is much vacant property around the station area. It has been zoned for intensive land use but there have been no buyers and it is believed that prices are not out of line. (Ogden)

A proposed regional shopping center is oriented to the freeway, not to BART. Capwell's has not done well in the BART station area. (Ogden, Anderson)

Currently there is speculative buying in the central area of Fremont, but this is not related to BART. (Anderson)

RESIDENTIAL AREAS -- URBAN

Rockridge

During the last several years there has been moderate sales activity with some conversions from apartments to condominiums and new commercial uses. During BART construction there was concern about change in the character of the neighborhood and there was downzoning from multiple to single family dwellings. Currently, there is little vacant land. (Hunt, McPherson)

During the period BART was under construction and into operation, there was selective buying "when the price was right." Whatever speculation there was involved residential or small commercial projects. (Ogden)

Fruitvale

There has been no speculative buying in the Fruitvale station area. Rather there has been a decrease in small businesses from lack of support. This is essentially a low income, minority residential area. (Brewster, Harvey, Jother)

Richmond

Acquisition of land around the BART station by the City Redevelopment Agency precluded speculative activity. Outside of this area it had been anticipated that property values would increase with BART and there was some purchase of properties by small-business persons. There is considerable vacant land, however, and values decreased rather than increased. (Harris, McMillian, including interviews in June)

Owners of the property along McDonald, a former business center, still hold minimally or unused land waiting for commercial activity to return to the area. (William Evans, June interview)

The population has declined from 1960 through 1975 at an annual rate of 2.1. A large shopping area in the hills of Richmond has drawn commercial activity from the downtown area.

Mission

Property sales activity in the larger Mission area is generally high and primarily related to residential use. Recently there has been considerable activity in the restoration of Victorians for own use or sales. (Marinello)

When BART was constructed there was some purchase of scattered lots and old buildings for rehabilitation. Values have not increased as expected although properties have nevertheless been developed. (Del Campo, Salazar, in June interview)

During BART construction there was fear by local residents of high rise development in BART station areas and areas were downzoned. (Salazar, June interview)

There has been little new construction in the station areas and what has occurred has been primarily commercial.

While there was speculative activity it was on a small scale and expected profits were not realized.

DOWNTOWN STATIONS

San Francisco

There has been high sales activity of property, conversions from residential to commercial use and increases in use intensity, dating back to 1960. The activity is not attributable to BART. In fact, the Embarcadero station was a response to a redevelopment plan for the area. In recent years some activity has been stimulated by the running out of depreciation write-offs and sales for tax benefits according to one informant. (Auerback and Samuels, Jr.; Ehlers)

New office construction in the downtown area increased after BART construction began (two buildings from 1960 to 1969, and nine from 1969 to 1975). There was also the movement of office construction to south of Market. (Blayney and Dornbusch, Program-Wide Case Studies, pp. 12-13)

With all of this activity in property development, informants did not believe there had been BART-related speculation. (Auerback and Samuels, Jr.; Ehlers)

Oakland

The City Redevelopment Agency cleared the land and Grubb and Ellis, as a pri-

vate investor, developed much of the land for the Civic Center BART station area. (Selter) There was some rehabilitation of office buildings and a little new construction outside of the redevelopment area. There has been little sales activity, property conversion or increase in intensity of use. (Selter)

At the 12th Street station during and after BART construction there was considerable new commercial construction—50 structures and facilities between 1965-77. (Blayney and Dornbusch, Station Area Land Use, p. 8) In this area, too, there was some rehabilitation of old office space.

New office space in the downtown area resulted in shifts from older buildings. Even so, new buildings have been slow to fill and the vacancy rate is still substantial.

Informants reported speculative purchases while BART was under construction. World Savings was reported as paying above market price for property for an office building. Bank of America purchased property eight years ago and has only now begun to develop an office complex for the property. (Hyde and Selter)

Commercial activity has not increased at the expected rate so that earlier speculative activity has been dampened.

Residential urban BART station areas have varying concentrations of minority populations. The question arises as to whether patterns of speculation, or its lack, were the same in these areas. The answer is mixed and dependent upon the local situation.

Rockridge

About a mile from the station there is a black residential population in single family homes. The area has remained stable during the BART period, although there was some loss of property for use in street widening. (Hunt, McPherson)

There have been scattered property sales of whites to minorities and some movement of whites into minority areas. There are a few minority owned businesses. Most commercial activity is white owned. Property transfers among minorities or to minorities were less active than was true for white property owners. (Hunt, McPherson)

Fruitvale

The area is dominated by Chicano populations closest to the station and blacks, more distant. There was no reported speculation by white, Chicano or Black residents, business persons or developers. (Brester, Harvey, Jother)

Richmond

There is a great deal of vacant, undeveloped land around the BART station, pri-

marily owned by the city's redevelopment agency. There is a government office building, a medical facility being constructed, and some commercial and residential property within a mile of the station. Chicanos and blacks account for half of the population of Richmond.

Black, small-business men, were among early investors seeking to profit from BART's location in Richmond. When expected profits were not realized, speculative buying was dampened. (Harris, McMillian, June interviews)

Mission

Populations in the Mission area are generally mixed rather than separated so minority property owners are scattered. (Doherty, Marinello)

There has been some property acquisition by Latinos, and, in some instances from Anglos, but experiences with the purchase and development of properties in the station areas appear to be similar. (DelCampo and Salazar, June interviews)

In the residential station areas of Walnut Creek and Fremont, there are no minorities dominant in the station areas, although Fremont has a sizable Latino population.

In the downtown areas of San Francisco and Oakland, both have sizable Chinese populations. The Chinese are not considered to be affecting property transfers in the downtown San Francisco area, nor to be involved in BART-related speculation. In Oakland, the redevelopment plan for the Civic Center includes a Chinese commercial and convention center which has still to be constructed. Within the redevelopment area, land use requirements mitigate against speculation.

APPENDIX C. KEY INFORMANTS INTERVIEWED

This appendix lists the key informants providing information for this study.

<u>Informant</u>	<u>Geographic Area Discussed</u>
1. Architect* - Builder Contractor	Mission, San Francisco
2. Mackey C. Salazar - Attorney	Mission, San Francisco
3. Martin Del Campo - Del Campo, Forscutt & Moyola - Architects	Mission, San Francisco
4. Russel Marinello - Regional Lending Officer - Bayview Federal Savings	Mission, San Francisco
5. Tom Doherty - Owner - Thomas H. Doherty	Mission, San Francisco
6. Leandro P. Soto - Executive Director - OBECA/Arriba Juntos	Mission, San Francisco
7. Bernard Averbuch - Executive Director - Market Street Development Project**	Downtown, San Francisco
8. Albert S. Samuels, Jr. - President - Market Street Development Project	Downtown, San Francisco
9. H. W. Ehlers - Milton Meyer	San Francisco, Concord
10. James McMillian - Pharmacist - Owner	Richmond
11. Charles Harris - Real Estate - Owner	Richmond
12. John C. Marziano - Owner - Pacific Bay Real Estate	Richmond
13. Kenneth Berndt - Manager - Central Bank	Richmond
14. Charles Woodward - Planning Director - City of Richmond	Richmond

*Wishes to remain anonymous

**Also provided comments on the first draft of this report

<u>Informant</u>	<u>Geographic Area Discussed</u>
15. William Evans - Business Director/ Research Director - Management Service Corp.	Richmond
16. Dick Lake - Zoning Administrator - City of Richmond	Richmond
17. Dene Ogden - Appraiser	Downtown Oakland, Fremont, Rockridge
18. Doug Salter - President - Grubb & Ellis Development Company	Downtown Oakland, Walnut Creek
19. Michael Kaplan - Architect - City Architectural Department	Downtown Oakland
20. Peter J. Crosby, III - Vice President - United California Bank	Downtown Oakland
21. Noboru Nakamura - Architect - Van Bourg, Nakamura, Katsura, Karney, Inc.	Downtown Oakland
22. Raymond Haymon - Grubb & Ellis - Commercial Brokerage Firm - Industrial	Oakland
23. John English - Oakland Planning Department	Oakland
24. L. Jother - Community Develop- ment Specialist - East Oakland Fruitvale Planning Council	Fruitvale
25. Clyde Brewster - Cloth Retailer - Foothill Merchants Association	Fruitvale
26. Community Volunteer* - Community Center	Fruitvale
27. Herbert Epstein - Director - Fremont Economic Development**	Fremont
28. Bill Schorer - President - Great American Land & Development Co.	Fremont

*Wishes to remain anonymous

**Also provided comments on the first draft of this report

<u>Informant</u>	<u>Geographic Area Discussed</u>
29. Bruce Dotson - Planner - City of Fremont	Fremont
30. C.H. Martin - Supervising Real Estate Appraiser - Alameda County Assessor's Office	Fremont
31. Arnold Anderson - Appraiser - Former BART Director	Fremont, Fruitvale, Coliseum
32. Roger Shanks - Associate Planner - Fremont Planning Department	Fremont
33. J. Altar - Independent Insurance Broker	Fremont
34. Manager* - Major Bank	Rockridge
35. Brenda Hunt - Salesperson - S. T. Ward Realtor	Rockridge
36. Orra Hyde - Vice President, National Accounts - Coldwell Banker	Oakland, South Contra Costa Lafayette, Concord, Rockridge
37. Les Foley - Walnut Creek Planning Department	Walnut Creek
38. Jay P. de'Leau - Executive Vice President - Walnut Creek Chamber of Commerce	Walnut Creek
39. John Grobe - Real Estate Broker - John Grobe & Company**	Walnut Creek
40. Harley Goldstern, Walnut Creek Community Development Department	Walnut Creek
41. Richard M. Betts - Appraiser**	East Bay
42. Frank McCullogh, Sr. - President - McCullogh Chevrolet	Hayward, Fremont
43. Robert Anderson - Vice President and Chief Appraiser - Citizens Savings and Loan Association	Oakland, CBD, Service Area in General

*Wishes to remain anonymous

**Also provided comments on the first draft of this report

<u>Informant</u>	<u>Geographic Area Discussed</u>
44. Monte Florence - Realtor - Civic Realty - and Hayward Planning Commissioner	Hayward, South Hayward
45. Ed Green, San Francisco Planning Department	San Francisco
46. Robin Jones, San Francisco Planning Department	San Francisco
47. Pat Salinas, San Francisco Planning Department	San Francisco
48. Charles Gill, San Francisco Planning Department	San Francisco
49. Bob Passmore, San Francisco Planning Department	San Francisco
50. Ben Ramos - President, Mission Economic Development Association	Mission, San Francisco
51. John McMahan, Consultant	Methodology, All Areas

**APPENDIX D. QUESTIONS ASKED KEY INFORMANTS INTERVIEWED
FOR THIS WORK ELEMENT**

**Interview Report Form
Key Informant Interviews
Land Use & Urban Development**

1. Name of Informant _____
2. Address _____
3. Name of Organization _____
4. Position _____
5. Telephone _____
6. Name of Previous Organization, if pertinent _____

7. Community About Which Interviewed _____
8. Work Elements About Which Interviewed _____

9. Where Interviewed _____
10. Date and Time of Interview _____
11. Informant Willing to Talk Again? Yes _____ No _____
12. Informant Willing to be Attributed as Source? Yes _____ No _____
13. Name of Interviewer _____
14. Date Report Submitted _____

Our firm is participating in a study for the Metropolitan Transportation Commission concerning BART's effects on Bay Area land use and related issues. Specifically, we are investigating whether and to what extent BART has induced, directly or indirectly, speculation in real property near the BART stations.

For the purpose of this study, we are defining speculation as the buying and/or holding of real property in expectation of profiting from changes in the market price which are not a direct result of investment in the property itself.

For the time being, please let's talk about the area around the _____ BART station. If you are aware of speculative activities near any other BART station, we'd like to come back to that a little later on in the questionnaire.

1. In the area around the station, compared to other areas in the immediate region, have you noticed a remarkable —
 - (a) high/low sales activity? ()
 - (b) many/few use conversions? ()
 - (c) increasing/decreasing use intensity?¹ ()
2. Are there areas near the station which are dominated by minorities?
(If "no," please jump to question 8.)
3. In relation to the station, where are they?
4. In the areas near the station which are dominated by minorities, have you noticed a remarkable —
 - (a) high/low sales activity? ()
 - (b) many/few use conversions? ()
 - (c) increasing/decreasing use intensity? ()
5. In areas near BART stations, has there been a remarkable amount of sales —
 - (a) from whites to minorities? ()
 - (b) from minorities to whites? ()

-
1. **High intensity use would be a property which has been improved (built upon) to the maximum allowed by zoning, and fully occupied. A very low use would be a parking lot (but not a parking structure!), for example, or a non-occupied lot or building.**

6. In areas near BART stations, has there been remarkable (more/less) intensification of property use if the property owner —
- (a) remains white? () (c) changes from white to minority? ()
 (b) remains minority? () (d) changes from minority to white? ()
7. In areas near BART stations, have there been remarkable (more/less) use conversions if the property owner —
- (a) remains white? () (c) changes from white to minority? ()
 (b) remains minority? () (d) changes from minority to white? ()
8. Are you aware of instances near the station where property has been bought for a price which was clearly higher than the value of the property (based upon its current income yield) was at the time of the sale?
- () None () Only a few () Many
9. If there is or has been speculative activity around the station area, how far approximately from the station would you say it extends?
- (a) _____ () feet/() miles (not blocks)
 (b) Any particular direction?
10. In relation to the construction of the station, when did the speculation occur? (Multiple answers are okay.)
- (a) much before the completion of the station ()
 (b) within a year before the completion ()
 (c) within a year after the completion ()
 (d) much later than the completion of the station ()
 (e) don't know ()
11. Could you elaborate on any of the above observations?

12. Now, if you know about speculation around any other BART station, may we ask you the same questions regarding these stations?

Thank you for your cooperation. May we cite your name as one of our Key Informants for this study?

APPENDIX E. DATA COLLECTION

To document BART-related speculative activity, four types of property-related data were collected (property sales, homeownership data, variance requests, and land-use changes) for eight station areas (Fremont; Fruitvale; 19th Street; Oakland; Powell Street, San Francisco; Richmond; Rockridge; 24th and Mission, San Francisco; and Walnut Creek). Information on a fifth property characteristic, interim uses of land, was available through interviews with knowledgeable informants.

In order to detect pre-BART trends, data as far back as January, 1960, were obtained insofar as possible. The data were collected in terms of distance to the BART stations to facilitate the intended analysis.

PROPERTY SALES DATA

To determine whether BART had induced either unusually high or low rates of property sales, sales data were collected for a random sample of properties surrounding each of the eight stations. The samples for the Alameda County stations (Fremont, Fruitvale, 19th Street Oakland, and Rockridge) included approximately sixty sites uniformly distributed within the survey area. This procedure was found to yield too few sample points near the station, so at the other study areas the proportion of parcels close to the station was increased to compensate for the fact that the concentric sample zones closest to the station also had the smallest areas. Over 100 sites were sampled in the other station areas (Powell Street, Richmond, 24th and Mission, and Walnut Creek).

With the cooperation of the San Francisco County Assessor's office, we recorded the dates of property sales directly from Property Record cards.¹ Preparation of new assessment rolls caused Property Record cards to be unavailable for Richmond and Walnut Creek. Instead, we utilized a record of property "turnovers" maintained by the Contra Costa County Assessor's Office.² Because non-sale transactions are included in this source, our figures overstate the true rate of property sales in Richmond and Walnut Creek. There is no reason to believe, however, that the rate of non-sale turnovers (e.g., granting of deeds of trust or changes in ownership due to death or divorce) would vary with distance to the BART stations, so the property turnover rate was assumed to be a valid indicator of speculative activity.

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1. In a few instances the Property Record cards were not available and those sites were dropped from the sample.
 2. This record is part of the microfilmed copies of the assessment rolls that can be viewed at the Marketing Office of the Contra Costa County Assessor. The current microfilmed assessment roll lists the last three property transactions for each parcel. Previous assessment rolls list from one to three property transactions. In cases where these data did not list all transactions back to 1960, arrangements were made to view Property Record cards.

We were unable to obtain access to the Alameda County Assessor's Property Record cards. Property sales in Oakland (the 19th Street, Fruitvale, and Rockridge stations) were determined from records maintained by the Oakland City Engineering Department. In Fremont we were only able to obtain data as far back as 1970, through the Assessor's "Historical File" of sales transactions.

The sample properties were plotted to determine their distance to the BART station. Each property sale was classified as pre-BART construction, concomitant with construction of the BART station and nearby track segments, or occurring during the period of BART's operation.

HOMEOWNERSHIP DATA

Since 1969, Californians who live in residences they own have been allowed exemptions on the assessments of their homes.³ A decrease in the number of homeowner exemptions taken in a neighborhood implies an increase in the number of housing units being rented or other changes in the property's status and thus may also indicate speculation.

Data on the number of properties receiving homeowner exemptions were available for each area under study for each year since 1969 from the county Assessor's rolls. Since the records are kept on a block-by-block basis, we selected the block rather than the individual property as the unit of analysis. Data were collected for all blocks within two blocks of the BART stations, for several blocks three blocks away, and for a few blocks farther away, reaching a total sample size of 26 to 45 sampled blocks for each station area. The Powell and 19th Street stations were exceptions: there the sample size and area of coverage had to be increased (to 66 and 83 blocks) due to the infrequency of exemptions claimed in each area.

The number of annual homeownership exemptions within each block was recorded by the mean distance of the block from the BART station. We then examined the net change in exemptions claimed from fiscal year 1973-74 to fiscal year 1977-78. (1973-74 was selected as the base year because in that year exemption levels were raised considerably, and in some areas this produced a dramatic increase over previous years in the number of claimants.)

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3. From 1969 to 1972 the homeownership exemption was worth a reduction of up to \$750 in the assessed property value. In 1973 the exemption level was raised to \$1,750. Before the exemption level was raised, homeowners also eligible for a veteran's property tax exemption of \$1,000 may have opted to take the veteran's exemption; only one exemption may be taken on any one piece of property. In such instances we assumed that if in 1973 a parcel that previously had had a veteran's exemption on it switched to having the homeownership exemption, we assumed the property owner had been a homeowner previously, but had just opted to take the higher exemption. If, in 1973, the veteran's exemption was still taken (or if no exemption was taken) we assumed the property owner had not previously been a homeowner.

VARIANCE REQUESTS

The dates and locations of variance requests are commonly compiled by local city planning departments. Walnut Creek, however, has no organized data on variances. Since "interim zoning" has served the Walnut Creek station area for over two years, building permit approval has been on a case-by-case basis and major variance requests between 1970 and 1976 have been compiled for the city at large. This information was sufficient except for the Rockridge area where virtually no major variances were shown. Therefore, we searched files containing variance information for College Avenue, the main thoroughfare in the Rockridge area, and in this manner obtained the dates and number of minor variances that had been requested in the area.

LAND-USE CHANGES

Land-use changes in each of the station areas were obtained from the BART Station Area Land-Use Atlas, compiled for the Study of Station Area Land Use. This Atlas identifies land-use changes that occurred between 1965 and 1977 within about 2000 feet of each station. Types of uses shown are single family residential, multiple unit residential, industrial, commercial or office, utility or transportation, and government and institutional. Parks, parking lots, and demolitions are also shown.

In the Powell, 19th Street, and Richmond station areas the number of land-use changes is influenced by a large number of demolitions for redevelopment projects. This was taken into account in analyzing the land-use change data.

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4. John Blayney Associates/David M. Dornbusch & Co., Inc., Study of Station Area Land Use (Berkeley: BART Impact Program Land Use and Urban Development Project Working Paper, November, 1977).

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